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ABSTRACT

This booklet describes academic program offerings in American colleges and universities in the area of occupational safety and health. Programs are divided into five major categories, corresponding to each of the core disciplines: (1) occupational safety and health/industrial hygiene, (2) occupational safety, (3) industrial hygiene, (4) occupational health nursing, and (5) occupational medicine. Within each category, the various program descriptions are arranged alphabetically by the name of the institution offering the programs. Indexes provide information regarding geographical distribution of programs by states, financial support through the NIOSH grant program, and all programs offered by the 12 Educational Resource Centers. (CS)

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DIRECTORY
OF
ACADEMIC PROGRAMS
IN
OCCUPATIONAL SAFETY AND HEALTH

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As our nation enters its third century, the protection of the health and safety of its most valuable resources, its working men and women, has become a prime concern. Due to today's commitment by government, industry, and labor, the career opportunities in the field of occupational safety and health are bright for those who have acquired the necessary experience or the appropriate academic background.

The first two-part edition of this booklet was developed in March 1977 by the Division of Training and Manpower Development, National Institute for Occupational Safety and Health. It was intended to help students, educators, guidance counselors, professional societies, employers, and employees who needed basic information concerning various academic programs being offered in the field of occupational safety and health.

To keep pace with the evolution of new programs at institutions across America, the Division of Training and Manpower Development has revised and combined the original two booklets of academic programs in occupational safety and health. Potential student applicants are encouraged to use this booklet in selecting a school based on desired field of study, location, and cost. For additional information such as curriculum, scholarships, stipends, or other financial assistance, please write to the various schools at the addresses given in this booklet.

Alan D. Stevens, D.V.M.
Director, Division of Training
and Manpower Development

PREFACE

A career in the occupational safety and health field can be very rewarding. It offers the opportunity to practice in a field full of rapidly changing technological advancements with the added fulfillment of giving service to your fellow man.

In order to highlight the national need to have highly qualified occupational safety and health practitioners available to protect life and limb of the country's workforce, the NIOSH recently inaugurated its Educational Resource Center Grants Program.* There are currently twelve Educational Resource Centers (ERC's) representing the geographical regions of the United States. All of these centers have academic and continuing education programs for each of the four core occupational safety and health disciplines: Occupational Medicine, Occupational Health Nursing, Occupational Safety, and Industrial Hygiene. Many of the Centers also have programs in other closely related fields, including industrial toxicology, epidemiology, biostatistics, dermatology, and ergonomics.

To those who are considering a career in the occupational safety and health field, the ERC's offer the opportunity for learning in a multidisciplinary atmosphere. You will be working side-by-side in classroom, laboratory, and field internship situations with students in other disciplines in much the same way you will be working with others as a team in real-world situations later on. The ERC concept is a much-needed and important addition to the existing single-discipline programs which are available. This catalogue contains descriptions of all these programs for your consideration and selection. We invite your use and ask you to pass it on to others for their use.

Thomas C. Purcell, Ph.D.
Chief, Educational Resource
Development Branch
Division of Training
and Manpower Development

*See the ERC index for a list of programs of each center and index references.

ORGANIZATION AND USE OF THIS PUBLICATION

The occupational safety and health programs described in this booklet are divided into five major categories: one for each of the core disciplines (occupational safety and health/industrial hygiene, occupational safety, industrial hygiene, occupational health nursing, and occupational medicine). Within each category the various program descriptions are arranged alphabetically by the name of the institution offering the programs. The Educational Resource Centers (ERC's) and some other institutions have several descriptive entries since they offer academic programs in more than one category.

Sequential numbers have been assigned to each entry in the order of their appearance in the publication. The Table of Contents and the list of Educational Resource Center Programs are keyed to these sequential numbers rather than page numbers. Three indexes appear at the back of this booklet. The first index, a geographical index showing the distribution of programs by states, has been included for the benefit of users whose particular interests in occupational safety and health education are influenced by geographical or regional considerations. The second index is an index of programs receiving financial support through the NIOSH grants program. The third index lists all programs in the 12 ERC's. All three indexes are also keyed to the sequential entry number assigned to the program description.

The information contained in the original 1977 edition was obtained by writing to well over 500 institutions in the United States, soliciting material describing their academic programs. This 1979 edition was developed by soliciting information from those institutions appearing in the original edition and from over 275 other schools which were understood to be considering the development of new academic programs in occupational safety and health. Efforts were made to make this booklet as comprehensive as possible, but a few addressees did not respond or were unable to respond in time to meet publication deadlines.

The descriptive entries for the various academic programs were drawn up on the basis of catalogues and informational materials provided by the responding institutions. Again, efforts were made to make each description as accurate as possible. If more information is needed by any user, we urge that he or she contact *directly* the specific institutions in which they are interested.

Users may also wish to receive the NIOSH career brochure entitled *Careers: Occupational Safety and Health*. For manpower information, one may also receive the NIOSH publication entitled *A Nationwide Survey of the Occupational Safety and Health Workforce* (DHEW NIOSH Publication No. 78-164). Inquiries related to

these documents, as well as other matters concerning education and training in this field, may be addressed to: Manpower Officer, Division of Training and Manpower Development, National Institute for Occupational Safety and Health, Robert A. Taft Laboratories, 4676 Columbia Parkway, Cincinnati, Ohio 45226.

William J. Weis, III
Manpower Officer

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ABBREVIATIONS USED IN THIS GUIDE

A.A.	Associate in Arts
A.A.S.	Associate in Applied Science
ACT	American College Test
A.S.	Associate in Science
B.A.	Bachelor of Arts
B.B.A.	Bachelor of Business Administration
B.Ed.	Bachelor of Education
B.S.	Bachelor of Science
B.S.E.H.	Bachelor of Science in Environmental Health
CLEP	College Level Examination Program
D.Eng.	Doctor of Engineering
Dr.P.H.	Doctor of Public Health
E.C.P.D.	Engineering Council for Professional Development
Ed.D.	Doctor of Education
ERC	Educational Resource Center
F.N.P.	Family Nursing Practitioner
GED	General Education Development
GMAT	Graduate Management Admission Test
GPA	Grade Point Average
GRE	Graduate Record Exam
M.A.	Master of Arts
M.B.A.	Master of Business Administration
M.D.	Doctor of Medicine
M.Ed.	Master of Education
M.Eng.	Master of Engineering
M.H.S.	Master of Health Sciences
M.H.Sc.	Master of Health Sciences
M.I.S.	Master of Industrial Safety
M.N.	Master of Nursing
M.P.H.	Master of Public Health
M.S.	Master of Science
M.S.E.E.	Master of Science in Environmental Engineering
M.S.E.H.	Master of Science in Environmental Health
M.S.N.	Master of Science in Nursing
M.S.P.H.	Master of Science in Public Health
NIOSH	National Institute for Occupational Safety and Health
OSH	Occupational Safety and Health
OSHA	Occupational Safety and Health Act
Ph.D.	Doctor of Philosophy
SAT	Scholastic Aptitude Test
Sc.D.	Doctor of Science
Sc.M.	Master of Science
S.D.	Doctor of Science
S.M.	Master of Science

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PROGRAMS IN OCCUPATIONAL SAFETY AND HEALTH/INDUSTRIAL HYGIENE

Associate Degree and Certificate Programs

1 **ARAPAHOE COMMUNITY COLLEGE.** Technical, Trade, and Industrial Division, Occupational Studies Program. 5900 South Santa Fe Drive, Littleton CO 80120. (303) 794-1550 ext. 413. Contact: Robert P. Wright, Director, Technical, Trade, and Industrial Division.

Offers Associate degree and Certificate in Safety Science Technology. Students who complete the 40-credit-hour Certificate program qualify as Safety Specialists. Courses in the Certificate Program include: Safety Program Management; Safety and Health Standards, Regulations, and Codes; Industrial Safety and Health; Construction Safety and Health; Safety Planning, Layout and Arrangement; Principles of Traffic Safety; Material Handling and Storage; Industrial Hygiene; Fire Prevention; Power Source Hazards Control; Sanitation and Public Health; Technical Math; and Basic Composition. The Associate degree requires 97 credits, including additional courses in Manufacturing Processes, Physics or Chemistry, Organizational Communications, First Aid, Blueprint Reading for Industry, Human Factors in Safety and Health, Technical Report Writing, Disaster Control, Radiological Safety and Hazards Evaluation, and Industrial Organizations.

Charges: full-time (12-18 credit hours) residents, $131.60/quarter, including fees; full-time non-residents, $484.25/quarter, including fees. Part-time residents, $12.10/credit, including fees; part-time non-residents, $41.50/credit, including fees.

2 **BREVARD COMMUNITY COLLEGE.** Environmental Control Engineering Technology Division. 1519 Clearlake Road, Cocoa FL 32922. (305) 632-1111. Contact: Mr. Ray Gompf, Professor.

Offers an Associate in Science degree designed to prepare graduates to work as Environmental Control Engineering Technicians. Applicants should have two years of high school math or equivalent. Graduates of the program may pursue a B.S. at two state universities. Courses include Environmental Biology, Environmental Instrumentation, Noise Pollution, Chemistry for Technicians, Air Pollution, Water Pollution, Ecological Problems Lab, Environmental Pollution Lab, Waste Water Treatment Operations, Vector and Rodent Control, Computer Usages, Human Relations in Industry, Nuclear and Radiological Control, and Solid Waste Control.

Tuition: residents, $13/credit hour; non-residents, $24/credit hour.

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3 **CATONSVILLE COMMUNITY COLLEGE.** Natural Science Department. 800 South Rolling Road, Catonsville MD 21228. (301) 455-4247. Contact: Francis A. Valentino, Assistant Professor, Occupational Safety and Health.

Offers Associate of Arts and Certificate in Occupational Safety and Health Technology and prepares students to work in loss prevention services, to guide businesses in conserving life, health, and property, and to use hazard detection devices. An option in Industrial Hygiene is also available. Graduates of an accredited secondary school (or its equivalent) will be accepted into the College's academic and Certificate program for credit. Test scores, high school records, and college records are used as course placement and research tools only. Courses include Blueprint Reading, Industrial Hygiene, Safety and Health Standards, Construction Safety and Health, Human Relations, Recognition and Control of Physical and Health Hazards, Accident Prevention and Loss Control, and Human Factors in Safety. The Industrial Hygiene option substitutes General Chemistry and Qualitative Analysis for Physical Science, Industrial Physics, and Construction Health. The A.A. program requires 63 semester hours. The Certificate in Occupational Safety and Health Technology requires 35 semester hours, consisting essentially of the same core courses without electives.

Tuition: Baltimore County residents, $18/credit hour; residents of other Maryland counties, $36/credit hour; non-residents, $80/credit hour.

4 **CHESTERFIELD-MARLBORO TECHNICAL COLLEGE.** P.O. Drawer 928, Cheraw SC 29520. (803) 537-5286. Contact: Mrs. Elaine Craft, Coordinator of Occupational Safety and Health.

Offers Associate in Industrial Technology in Occupational Safety and Health to high school graduates or holders of equivalency certificates. The program prepares candidates to evaluate, recognize, and control occupational hazards in business or industry and to advise on compliance with OSHA regulations. Curriculum topics include Safety and Loss Prevention, Industrial Hygiene, Administering Safety and Health Programs, Federal and State Regulations, Use of Occupational Environment Evaluation Instruments, First Aid, Personnel Management, Industrial Audiometry, and OSHA Information Sources. Additional topics include Algebra, Blueprint Reading, Basic Anatomy and Physiology, Chemistry, Economics, Fire Prevention, Physics, and Supervisory Psychology. The program requires six to seven quarters and 105 credit hours.

The college also offers Associate in Occupational Technology. In addition to 40.5 hours of the same core courses, 45.5 hours are required from other technical areas, 24 from general education, and 12 from electives. This program takes seven to eight quarters.

Tuition: $10.50/credit up to 12 hours, $125.00/quarter for 12 or more hours.

5 **CLEVELAND COUNTY TECHNICAL INSTITUTE.** Industrial Department. 137 South Post Road, Shelby, NC 28150. (704) 482-8351. Contact: Hugh Walker, Instructor in Industrial Safety and Health Technology.

Offers Associate in Applied Science in Industrial Safety and Health Technology to qualified high school graduates. The program is intended to produce safety engineer technicians skilled in development of safe working conditions, human factors in machine and equipment safety, noise reduction safety apparel, and safety evaluation. Required courses include Multiple Line Insurance and Rating, Industrial Hazards and Fire Prevention, Inspection Principles and Practice, Occupational Safety and Health, Traffic and Fleet Safety, Personal Protective Safety Equipment, Industrial Hygiene, Industrial Safety, Hearing Conservation and Noise Control, Industrial Statistics, and Safety Psychology and Management. Electives include Reading Dynamics, Industrial Management, Graphics, Chemical and Radiation Hazards, Applied Psychology, and Management Problems. A total of 108 quarter hours are required for the degree.

Tuition: full-time residents, $39.00/quarter; part-time residents (less than 12 credit hours), $3.25/credit. Full-time non-residents, $198.00/quarter; part-time non-residents, $16.50/credit.

6 **DELGADO COLLEGE.** Occupational Safety and Health Department, Allied Health Studies Division. 615 City Park Avenue, New Orleans LA 70119. (504) 486-7393 ext. 257 or 296. Contact: George H. Hansberry, Chairman, Occupational Safety and Health; Bert W. Chalona, Chairman, Industrial Hygiene Technology.

Offers Associate degrees in Occupational Safety and Health and in Industrial Hygiene Technology. College practices open admissions and requires high school diploma or equivalent or age of 18, American College Test or Scholastic Aptitude Test, and health certificate. Occupational Safety and Health program requires 66-74 credit hours, including core courses in Industrial First Aid, Industrial Safety, Psychology in Accident Prevention, Chemistry of Hazardous Materials, Marine Accident Prevention, Damage Control, Principles of Materials Handling, Industrial Noise Control, Traffic Safety, Safety Seminar, Plant Layout, OSHA Federal Law, Drug and Alcohol Abuse in Industry, Safety and Health Computations, Personal and Community Health, Industrial Noise Control, and Safety and Health Planning. Graduates may enter a B.S. program in this field by special arrangement with Our Lady of Holy Cross College. Associate in Science program in Industrial Hygiene Technology includes courses in Chemistry, Industrial Hygiene, Drafting, Statistics, Physics, Industrial Processes Hygiene, Calculus, and Human Anatomy and Physiology. Electives for both programs include Shop Safety, Workmen's Compensation, Safety and Health Planning, Epidemiology, Radiological Health, Air Pollution, and Industrial Environmental Health.

Charges: residents, 1-11 credit hours, $80-$160; 12 credit hours and over, $170. Non-residents, 4-11 credit hours, $195.00-$448.75; 12 credit hours and over, $485.

7 **FERRIS STATE COLLEGE.** School of Technical and Applied Arts and School of Allied Health. Big Rapids MI 49307. (616) 796-9971. Contact: R. W. Allen, C.S.P., Assistant Professor, ext. 457; or Michael R. Tillotson, C.I.H., Assistant Professor, ext. 480.

Offers A.A.S. in Occupational Safety Technology. Course work includes Toxicology, Systems Safety Analysis, Fundamentals of Industrial Hygiene, Vibration, Air Sampling and Analysis, Noise and Its Control, Ventilation, Laws and Regulations, Industrial Hygiene Control Methods, Loss Control Program Analysis, Principles of Accident Prevention, Environmental Radiation, and Methods and Principles of Safety Training. Ferris also offers baccalaureate programs in Occupational Safety and Occupational Health which are described elsewhere in this section.

Tuition: residents, $23.20/credit hour; non-residents, $56.00/credit hour.

8 **HENRY FORD COMMUNITY COLLEGE.** Department of Management Training, Occupational Health and Industrial Safety Program. 5101 Evergreen, Dearborn MI 48126. (313) 271-2750. Contact: Ted Matley, Administrator, Management Training Program.

Offers A.S. in Occupational Safety and Health with options in Industrial Safety or Industrial Hygiene Technology for completion of 64 semester hours of coursework. The program is open to all high school graduates and is designed to prepare the student for positions in government or industry as an occupational safety specialist or industrial hygiene technologist. Courses include Industrial Hygiene, Industrial Noise Control, Industrial Toxicology, Industrial Ventilation, Environmental Pollution and Control, Industrial Safety, Air Sampling Methods and Analyses, Personnel Management, and Technical Mathematics. Electives include Chemistry, Physics, Fire Sciences, Biology, and Human Anatomy and Physiology. Field trips to industrial facilities supplement the coursework.

Tuition and fees: $362/semester or $22/credit hour.

9 **HILLSBOROUGH COMMUNITY COLLEGE.** Occupational Safety and Health Program. P.O. Box 22127, Tampa FL 33622. (813) 247-6641. Contact: Mr. Wilfred Hanson, Director, (813) 247-6641 ext. 444 (days), or Mr. Bob Malloy, Coordinator, (813) 247-6641 ext. 658 (evenings).

Offers A.S. for completion of the Occupational Safety and Health Technician Program, which combines Safety Engineering, Industrial Hygiene, and Fire Protection.

A.S. degree requires 62 credit hours, and a Certificate of Proficiency in Occupational Safety and Health may be earned by completing 35 credit hours. Graduation from an approved secondary school or High School Equivalency Certificate is necessary unless the applicant is over 21 years of age. Courses include: Occupational Safety and Health; Industrial Health Education; Safety and Health Standards, Codes, and Regulations; Physical Hazards Control; Motor Fleet Safety; Consumer Product Safety; Emergency Preparedness Procedures; Industrial Hygiene; Industrial Fire Protection; Human Factors in Safety; and Safety Program Management.

Tuition: residents, $12/credit hour; non-residents, $27/credit hour.

10 **HONOLULU COMMUNITY COLLEGE OF THE UNIVERSITY OF HAWAII.** Department of Occupational Safety and Health. 874 Dillingham Blvd., Honolulu HI 96817. (808) 845-9155. Contact: Julius Morris, Ph.D., Chairman, Department of Occupational Safety and Health.

Offers Certificate of Achievement or Associate in Science degree in Occupational Safety and Health to any high school graduate or person 18 years of age or over who meets the entrance requirements of the College and who can profit from the instruction. The certificate requires completion of 30 hours in Occupational Safety and Health, Industrial Hygiene Methods, Industrial Fire Prevention and Protection, Human Factors in Safety and Health, Physical Hazards Control, Accident Investigation Techniques, Occupational Safety and Health in Construction and Allied Industries, and Electrical Safety. Associate degree requires, in addition to completion of 30 hours of professional core subjects, 30 credit hours in academic subjects from the humanities, social, and physical sciences. All courses are offered in both day and evening sessions. The Occupational Safety and Health program is designed for employed occupational safety and health specialists who want to increase their expertise, high school graduates and others interested in a career in OSH and a baccalaureate degree, and high school graduates and others who are interested in OSH courses for their self-improvement.

Tuition: residents, $3.50/credit with maximum charge of $40.00/semester; non-residents, $38.00/credit with a maximum charge of $450.00/semester.

11 **HOUSATONIC COMMUNITY COLLEGE.** 510 Barnum Avenue, Bridgeport CT 06608. (203) 579-6471. Contact: Mr. Richard Cooper, Associate Dean for Academic Development.

Offers Associate in Science and Certificate in Occupational Safety and Health under an open admissions policy for holders of high school diploma or equivalent. The Certificate requires 30 semester hours of study and is recommended for those currently employed with occupational safety and health responsibilities. The Associate

degree requires 65 semester hours and is open to anyone interested in occupational safety and health as a career. Core courses in these programs include Statistics, English Composition, Psychology, Occupational Safety and Health, Federal and State Codes/Standards, Physical Hazards, and Industrial Hygiene. Other courses include Chemistry, Physics, Management, Personnel Administration, Industrial Psychology, Motor Fleet Safety, Human Factors in Safety, Fire Protection, Construction Safety, Techniques in Industrial Hygiene, Safety Program Management, and Industrial Hygiene Engineering.

Tuition: full-time residents, $177.00/semester; part-time residents, $45.50 to $157.00 for 3-11 semester hours.

12 **JEFFERSON STATE JUNIOR COLLEGE.** Department of Management, Division of Career Education. 2601 Carson Road, Birmingham AL 35215. (205) 853-1200 ext. 240. Contact: Dr. Scott A. Marshall, Division Chairman, or Mr. J. Edward Coker, Department Chairman.

Offers Associate in Applied Science in Management and Supervision Technology with an option in Occupational Safety and Health to holders of high school diploma or GED equivalency. The program requires 103 credits, and required courses include Occupational Safety and Health, Occupational Hygiene, Special Studies in Occupational Safety and Health, and Directed Readings in Occupational Safety and Health. Other courses required for the major include Management, Elements of Supervision, Personnel Management, Labor Economics-Labor Relations, and a Management Seminar. General requirements include Communication Skills, Economics, Business Communications, General Psychology, Introduction to Computers, and 25 hours of electives selected from related courses in business, vocational education, and general education.

Tuition: full-time students, $80/quarter; part-time students, $8/credit hour for 1-10 quarter hour credits.

13 **MARSHALL UNIVERSITY.** Community College. Huntington WV 25701. (304) 696-3646. Contact: George Frisch, Coordinator, Occupational Safety and Health.

Offers Certificate of Proficiency and A.A.S. in Occupational Safety and Health Technology in programs designed for part-time students with safety-related jobs as well as for full-time students. Admission requires high school graduation or equivalent. Courses for the 31-hour Certificate include: Employee-Employer Rights and Responsibilities; Facility Planning, Layout, and Arrangement; Occupational Safety and Health; Inspection Procedures; OSH Programming; OSH Management; Occupational Health and Hygiene; OSH Record Keeping; OSH Compliance Standards; OSH

Violations, Citations, Penalties and Procedures; Personnel Protective Equipment; and First Aid. A.A.S. requires 70 credits, including additional courses in: Technical Communications; Psychology; Human Relations and Work; Construction Safety; Disaster Control; Material Handling and Storage; Power Source Hazards Control; Traffic and Fleet Safety; and Industrial Fire Protection.

Enrollment fees: full-time (12 or more semester hours) residents, $174.65/semester; full-time non-residents, $649.65/semester. Part-time residents, $15.55-$121.05 for 1-11 semester hours; part-time non-residents, $55.15-$556.65 for 1-11 semester hours.

14 **MIDLANDS TECHNICAL COLLEGE, BELTLINE CAMPUS.** Post Office Drawer Q, Columbia SC 29250. Contact: Perry C. Hopkins, Director of Continuing Education.

Offers A.A.S. in Safety and Health Engineering Technology; applicants must present high school transcripts, Career Planning Profile or Scholastic Aptitude Test results, and backgrounds in Algebra, Plane Geometry, and Trigonometry. The program requires 115 credits for graduation, including 54 credits from core courses. A senior project in OSH includes field work in evaluation, planning, and administration. Courses include Safety Management, Industrial Safety, Industrial Hygiene, Occupational Safety Engineering Techniques, Occupational Safety Management and Engineering, Fire Prevention and Protection, Inspection Techniques, Engineering Drawing, Radiological Safety, Nuclear Instruments, Nuclear Reactor Safety, Human Anatomy and Physiology, Manufacturing Processes, Human Relations, Physics, Technical Report Writing, Principles of Management, Technically Related Topics in Safety and Health, Calculus, Economics of Engineering, and Supervisory Development.

Tuition: full-time (12 or more credits) residents of Richland and Lexington Counties, $150.00/quarter; full-time other South Carolina residents, $187.50/quarter; full-time non-residents, $300.00/quarter. Richland and Lexington County resident part-time students, $13.00/credit; other South Carolina resident part-time students, $16.00/credit; part-time non-residents, $25.00/credit.

15 **MOUNT HOOD COMMUNITY COLLEGE.** Trades and Service Occupations Division. 26000 S.E. Stark St., Gresham OR 97030. (503) 667-7151. Contact: John F. Helding, Division Chairman.

Offers Associate degree program in Occupational Safety and Health Technology, designed to prepare students for careers as plant or job safety inspectors or as paraprofessional safety supervisors and to provide individuals currently working in this career field with the opportunity to update and upgrade themselves through special-

ized courses. The program requires 6 quarters for completion of 92 credits, 39 in the major field, 23 in general education courses, and the rest in related electives. Courses include: Safety Program Planning, Organization, and Administration; Safety and Health Standards, Regulations, and Codes; Industrial Safety and Health; Certified Safety Preparation; Material Handling, Storage, and Layout; Construction Safety and Health; Power Source Hazards Control; Noise and Sound Control; Accident Investigation and Worker's Compensation, Fire Prevention and Protection, and Occupational Safety Analysis. Each student will be employed in an off-campus Cooperative Work Experience closely related to their program. All safety courses in the major fields are given from 7-10 PM on week nights. The Occupational Safety classes of this curriculum are transferable to the Department of Health at Oregon State University.

Tuition: District residents, $15/credit hour; non-district Oregon residents, $20/credit hour; out-of-state or international students, $50/credit hour.

16 **MOUNT SAN ANTONIO COLLEGE.** Drafting and Industrial Technology Department. 1100 North Grand Ave., Walnut CA 91789. (714) 598-2811 ext. 208. Contact: Mr. Robert T. Elliot, Department Chairman.

Offers A.S. degree in Occupational Safety and Health and Certificate in OSH to high school graduates or persons at least 18 years old. Certificate in OSH requires five major courses plus two electives, for a total of 21 credits; OSH major in A.S. program constitutes 27 hours of the 60 needed for graduation. Courses include: Safety and Health Standards, Codes, and Regulations; Introduction to OSH; Physical Hazards Control; Industrial Hygiene; Workers' Compensation Law; and Technical Math.

Tuition: free to district residents and non-district California residents; nonresidents pay $42/credit up to a maximum of $630/semester.

17 **NORTH SHORE COMMUNITY COLLEGE.** Department of Safety Technology. 3 Essex St., Beverly MA 01915. (617) 927-4850. Contact: Francis M. Ryan, Associate Professor.

Offers a two-year A.S. program in Occupational Safety and Health designed to permit the graduate to continue formal education in a baccalaureate program at a four-year school. The program requires 61 credits for completion. Major courses include Introduction to OSH, Occupational Safety, Instrumentation and Sampling, Engineering Drawing, Behavioral Science, Chemistry of Hazardous Materials, and a Field Internship.

Tuition: full-time (10 or more semester hours) residents, $150/semester; full-time non-residents, $441/semester. Part-time residents, $16/semester hour; part-time non-residents, $37/semester hour.

18 **NORTHEASTERN CHRISTIAN JUNIOR COLLEGE.** 1860 Montgomery Ave., Villanova PA 19085. (215) 525-6780. Contact: C. F. Myer, Jr., Academic Dean.

Offers A.S. program in Industrial Health and Safety to high school graduates who submit transcripts, three references, College Board or American College Test scores, and medical statement. The school is dedicated to a Christian philosophy and attendance carries with it a commitment to live and work within a Christian framework, but students of any belief or background may qualify for admission. Industrial Health and Safety program is designed to train participants as paraprofessionals in the field or to qualify students for subsequent baccalaureate programs. The program requires approximately 67 credits and two years for completion. Courses include: Engineering Drawing; Safety and Health Standards, Codes and Regulations; Occupational Safety and Health; Industrial Safety; Industrial Safety Practice; Industrial Fire Protection; Industrial Hygiene; Chemistry; Physics; Anatomy and Physiology; Statistics; and one Bible-related course each semester.

Tuition: $60/credit hour.

19 **NORTHERN VIRGINIA COMMUNITY COLLEGE, ALEXANDRIA CAMPUS.** Division of Health and Public Service. 3001 N. Beauregard Street, Alexandria VA 22311. (703) 323-4251. Contact: Dr. Craig Washington, Division Chairman, or George Burgess, Program Head.

Offers six-quarter A.S. program in Occupational Safety and Health with specialization options in Industrial Safety (97 quarter hours) or Industrial Health (98 quarter hours). Admission is open to persons with a high school diploma or the equivalent or who are at least 18 years old. Programs are designed to qualify individuals as technician/specialists or for entry-level management positions. N.V.C.C. also provides specialized courses for persons currently employed in the field as well as introductory courses for collateral duty safety designees. The Industrial Safety specialization emphasizes safety management and the physical hazards of the job environment. General education requirements consist of 45 quarter hours in science, mathematics, English and social sciences. Major courses and supporting electives require 52 quarter hours and include Safety and Health Standards, Safety Organization and Administration, Hazard Recognition and Control, Industrial Safety Design and Layout, Construction Safety, Maintenance Management, Human Factors, Instrumentation, Industrial Processes, Occupational Environment, and Fire Prevention. The Industrial Health specialization provides the basic science background and specialized courses to prepare individuals for positions as industrial health technicians or health inspections specialists. Coursework includes 31 quarter hours of laboratory sciences, 27 quarter hours in math, English and social sciences, and 41 quarter hours in major courses and approved electives. Specialized courses cover: Chemical Heat, Noise, Radiation and Ergonomic Stresses, Work Environment Instrumentation and Analysis, Personal Protective Equipment, and Hazardous

Materials and Safety Management. Qualified students may earn up to 15 quarter hours of academic credit while gaining on-the-job experience as safety or health technician-trainees with local firms and government agencies.

Tuition: residents, $100.00/quarter full-time, $8.50/credit part-time; non-residents, $335.00/quarter full-time, $28.00/credit part-time.

20 **ORANGE COAST COLLEGE.** Department of Occupational Safety and Health. 2701 Fairview Road, Costa Mesa CA 92626. (714) 556-5812. Contact: Bill J. Abernathy, Chairman, Technology Divison.

Offers Certificate and A.A. in Occupational Safety and Health for completion of 29 (Certificate) and 60 (A.A.) semester credits. College admits anyone who holds high school diploma or equivalent or who is 18 years of age or older. Major courses include Occupational Safety and Health, Physical Hazards Control, Industrial Hygiene, Industrial Fire Protection, and Worker's Compensation and OSHA.

Tuition: no charge to residents; non-residents, $48/credit.

21 **ROCK VALLEY COLLEGE.** Division of Technology. 3301 North Mulford Road, Rockford IL 61101. (815) 226-2650. Contact: Professor Ken Barton, Occupational Safety and Health Technology Program.

Offers A.A.S. and a wide variety of certificate programs in Occupational Safety and Health Technology. The College practices open admissions to high school graduates or persons at least 18 years old; prospective full-time students are encouraged to take the American College Test. A.A.S. program requires 62-66 semester credits and two years for completion; 19 credits are for required courses and 21 more are for technology electives. The school also offers 31-hour (one-year) certificates in Industrial Safety, Business Safety, Health Care Safety, Construction Safety, Public Utility Safety, and Motor Fleet Safety; nine-hour Mini-Certificates in Safety Training, Hazardous Materials Safety, Fleet Safety, Hospital Safety, and Hygiene and Noise Control; and six-hour Mini-Certificates in OSHA Standards and Codes and Hospital Safety. Courses include: Introduction to Occupational Safety; Safety and Health Standards, Codes and Regulations; Elements and Techniques of Occupational Hygiene; Noise Measurement and Control; Safety Training Methods; Industrial Safety; Loss Control Management; Human Behavior in Safety; Construction Safety; Public Utility Safety; Hazardous Materials Safety; Motor Fleet Safety; Safety in Business; and Hazardous Material Transportation Safety.

Tuition: district resident students, $15/credit hour; out-of-district Illinois residents pay tuition covering the full cost of instruction, less the state's contribution per credit hour. The student's home district may contribute the difference under state law. Non-Illinois residents pay the full cost of instruction as determined by state law.

22 **ROWAN TECHNICAL INSTITUTE.** Fire and Safety Department. Post Office Box 1595, Interstate 85 at Klumac Road, Salisbury NC 28144. (704) 637-0760 ext. 46. Contact: Donald Linville, Program Head, Industrial Safety and Health Technology.

Offers A.A.S. in Industrial Safety and Health Technology for completion of 104 quarter credits in a sequence of 7 consecutive quarters. The School practices open admissions for high school graduates or any person at least 18 years old who has passed the GED test. The program includes courses in Emergency Medical Service, Chemistry, Industrial Safety, Organic Chemistry, Human Anatomy and Physiology, Technical Physics, Drafting and Blueprint Interpretation, Industrial Fire Hazards, Hazardous Materials, Construction Safety, Inspection Principles and Practices, Nature and Effects of Occupational Health Hazards (Industrial Hygiene), Supervisory Control for Accidents, Principles of Supervision, Measurement and Evaluation of Occupational Health Hazards, Safety Management, Control of Industrial Health Hazards, Special Problems in Industrial Safety, and Industrial Organization and Management.

Tuition: residents, $3.25/credit hour up to a maximum of $39/quarter; full-time non-residents, $198.00/quarter.

23 **SALEM COLLEGE.** Industrial Technology Department. Salem WV 26426. (304) 782-5393/5262. Contact: Terry Haggerty, Chairperson.

Offers an A.S. degree in Engineering Technology with a specialty in Occupational Safety and Health for completion of 66 semester credits. Candidates should have a high school diploma or equivalent and should submit ACT scores. Degree requirements include two semesters of chemistry, two semesters of physics, and one course in statistics and trigonometry. Courses include Occupational Safety and Health, Industrial Hygiene, Electrical and Mechanical Hazards, Environmental Aspects of Safety, Industrial Safety and Loss Control, and Safety Program Management. Financial aid is available. Salem also offers a B.S. program in Engineering Technology, which is described elsewhere in this section.

Tuition: $1,300/semester.

24 **SAN DIEGO CITY COLLEGE/SAN DIEGO EVENING COLLEGE.** 1313 Twelfth Avenue, San Diego CA 92101. (714) 280-7610, ext. 176. Contact: Walter DeFelice, Jr., Coordinator of Vocational Education, or S. Spottswood, Industrial Hygienist Coordinator (714) 238-1181.

Offers Certificate and A.S. in Occupational Safety and Health and in Industrial Hygiene. Certificate requires completion of 29 semester hours for occupational

safety and 31 semester hours for Industrial Hygiene. An additional 30 semester units of general education are required for the Associate in Science degree. Course offerings include: Occupational Safety and Health; Organic and Inorganic Chemistry; Elements of Industrial Hygiene; Techniques of Industrial Hygiene; Standards, Codes, and Regulations; Occupational Hazards Control; Industrial Hygiene Sampling and Analysis; Industrial Hygiene Physical Hazards Control; Human Factors; Special Problems in Industrial Hygiene; Construction Industry Safety and Health; Physical Hazards Control; and Hearing Conservation. Safety Program Management and Industrial Toxicology courses will be added in 1979-80.

Tuition: Free to district residents and non-district California residents. Non-residents pay $46/unit up to a maximum of $690/per semester.

25 **SAN JOAQUIN DELTA COLLEGE.** 5151 Pacific Ave., Stockton CA 95207. (209) 478-2011. Contact: Donald Mathews, Chairperson, Division of Technical and Industrial Education.

Offers Certificate and A.A. degree in Industrial Safety and Health. The college practices open admissions for holders of high school diploma or equivalent or persons at least 18 years old. A student may earn both A.A. and Certificate by completing 60 units that include 18 units of general education, 33 units for the Certificate, and 9 additional units of electives. Courses include Industrial Safety and Health, Safety Codes, Physical Hazards, Industrial Hygiene, Human Factors in Safety, Report Writing, Speech, Industrial Math, and Physical Science.

Charges: residents, $5 registration fee only; non-residents, $46/semester unit (normal load 12 units).

26 **TEXAS STATE TECHNICAL INSTITUTE, JAMES CONNALLY CAMPUS.** Waco TX 76705. (817) 799-3611 ext. 401 or 402. Contact: Frederick A. Trombley, Program Chairman, Occupational Safety and Health Technology.

Offers A.A.S. in Occupational Safety and Health Technology for completion of 96 quarter credits (two years). Admission depends on general vocational guidance and aptitude tests, medical examination, high school diploma or equivalency, and counselor evaluation. Courses include: Safety Program Organization and Administration; Safety and Health Standards, Regulations, and Codes; Human Relations; Safety Planning; Layout and Arrangement; Advanced First Aid; Power Source Hazards; Principles of Traffic Safety; Evaluation and Control of Occupational Environment; Materials Handling and Storage; Safety and Accident Prevention, Operational Workplaces; Environmental Health; Radiation Safety; Construction Safety and Health; Occupational Safety Engineering Techniques; Industrial

Fire Protection; Disaster Control; Radiological Safety and Hazard Evaluation; Occupational Disease Control; and Nuclear Safety. All students who complete the major in this field qualify as Red Cross First Aid instructors.

Charges: residents, $96/quarter; non-residents, $276/quarter.

27 **THOMAS NELSON COMMUNITY COLLEGE.** Division of Public Services, Department of Occupational Safety and Health. P.O. Box 9407, Hampton VA 23670. (804) 826-4800 ext. 245. Contact: Dr. John P. Hill, Division Chairman; Mr. John Friel, Department Head, (804) 826-4800 ext. 303; or Mr. Earl Allen, Instructional Assistant, (804) 826-4800 ext. 229.

Offers A.A.S. in Occupational Safety and Health Technology for completion of 97 credits over six academic quarters. TNCC practices open admission to all holders of high school diploma or equivalent or to persons at least 18 years old. Entrance into Occupational Safety and Health program requires satisfactory completion of four high school units of English, one of mathematics, and one of laboratory sciences. Courses in A.A.S. program include: Instrumentation for Occupational Safety and Health; Safety and Health Standards, Regulations, and Codes; Safety Program Organization and Administration; Power Source Hazard Control; Industrial Safety Design and Layout; Material Handling and Storage; Industrial Safety; Human Factors and Safety Psychology; Sound and Noise; Workplace Maintenance Management; Occupational Safety Engineering Techniques; Machinery and Hand Tool Hazards Control; Occupational Injury and Disease Control; Air Pollution and Noise Abatement; Biological and Chemical Control; Occupational Health; Fire Protection; Construction Safety and Health; Occupational Environment; and Radiation Health.

Tuition: full-time (12 or more credits) residents, $100/quarter; full-time non-residents, $335/quarter. Part-time residents, $8.50/credit; part-time non-residents, $28.00/credit.

28 **TRITON COLLEGE.** 2000 Fifth Avenue, River Grove IL 60171. (312) 456-0300 ext. 438 or 470. Contact: Mrs. Frances McCann, Dean of Health, Personal, and Public Services Careers.

Offers Associate degree in Occupational Safety and Health for completion of 68 semester credits. College practices open admissions for GED holders or high school graduates with one year each of algebra and chemistry and physician's report of good health. The program includes courses in: Occupational Safety and Health; Safety Program Administration and Communication; Standards, Regulations and Codes; Hazards in the Workplace; Technical Physics; Material Handling and Plant Layout; Identification, Sampling and Analysis of Toxic Substances; Identification, Sampling, and Analysis of Physical Factors; Health Hazards and Occupational Disease; Occupational Injury Prevention; and Industrial Psychology.

Charges: District residents, $13.00/semester hour; other Illinois residents, $44.74/semester hour; non-residents, $58.55/semester hour. All students also pay $15 matriculation fee and $2-$15 activity fee, depending on course load.

29 **UNIVERSITY OF NEW HAVEN.** Occupational Safety and Health Program, School of Professional Studies and Continuing Education. 300 Orange Avenue, West Haven CT 06516. (203) 934-6321. Contact: Joseph J. Arnold, Program Director, or Ahmed R. Mandour.

Offers A.S. degree with a major in Occupational Safety and Health to graduates of accredited secondary schools or persons who have passed the high school equivalency test who submit S.A.T. or A.C.T. scores. A.S. degree program consists of 65 semester hours in the following areas: English, Mathematics, Chemistry, Physics, Biology, Occupational Safety and Health, Psychology, Industrial Engineering, Sociology, Fire Science, and nine semester hours of electives. The University also offers a B.S. program in OSH which is described elsewhere in this section.

Charges: $1,286/semester for 12-18 hours plus $45 fees; $85.75/credit for less than 12 hours; $60/credit for more than 18 hours. Part-time or evening students, $60/credit hour up to 12 hours.

30 **UNIVERSITY OF TOLEDO.** Technical Science and Mathematics Department, University Community and Technical College. 2801 W. Bancroft, Toledo OH 43606. (419) 537-3112. Contact: Roy Stein, Program Coordinator.

Environmental Control/Protection Technology program offers a two-year Associate degree and a one-year Certificate program for completion of 103 and 45 credit hours, respectively, in the Industrial Hygiene and Safety major. Applicants must have high school diploma or equivalent. Courses include Contemporary Problems in Ecology, Air Pollution Sampling and Analysis, Environmental Technology Seminar, Industrial Processes and Materials, Health Effects of Environmental Pollutants, Noise Pollution Sampling and Analysis, Industrial Hygiene, Industrial Hygiene Measurements, Water Pollution Sampling and Analysis, Industrial Safety, First Aid and Safety, Environmental Law, and Radiation Surveillance and Control.

Tuition: full-time (12-16 credit hours) residents, $308.50/quarter; part-time residents, $25.70/credit hour. Full-time non-residents, $793.50/quarter; part-time non-residents, $66.10/credit hour.

Baccalaureate and Advanced Degree Programs

31 **CALIFORNIA STATE UNIVERSITY, FRESNO.** Department of Health Science, Division of Health Professions. Shaw and Cedar Avenue, Fresno CA 93740. (209) 487-1214. Contact: Steven Zuieback, Lecturer in Health Science, or Sanford M. Brown, Professor and Chairman in Health Science.

Offers a B.S. in Health Science with option in Occupational Safety and Health. The degree requires 124 units, with a minimum of 80 units in the Department of Health Science. Students receive a strong background in chemistry, physics, biology, mathematics, and engineering. Core courses include Occupational Health, Industrial Hygiene Measurement, Radiological Health and Safety, Occupational Safety, Fire Protection Engineering, Principles of Safety Engineering, Systems Safety Engineering, and Manufacturing Processes. The Department is investigating the possibility of offering an M.S. degree in Occupational Safety and Health. Graduate courses are currently available in Industrial Toxicology, Industrial Noise Control, Industrial Ventilation for Contaminant Control, and Seminars in Industrial Safety Problems.

Tuition: full-time residents (6.1 or more units/semester), $75/semester; non-residents, $75 plus $57/unit up to a maximum of $855/semester. Part-time residents, $60/semester; part-time non-residents, $60 plus $57/unit.

32 **CALIFORNIA STATE UNIVERSITY, LOS ANGELES.** Department of Health and Safety Studies. 5151 State University Drive, Los Angeles CA 90032. (213) 224-3356. Contact: Dr. Barbara Henkel, Chairperson.

Offers B.A. and M.A. in Health and Safety Studies. Bachelors program requires a minimum of 186 quarter units, including 55-56 units of lower division and 60-64 units of upper division courses. Ample opportunity exists to meet a variety of needs through elective courses, independent study, research, and internship or field experience. Applicants should present high school transcript (including B-12 final grades), American College Test (ACT) or Scholastic Aptitude Test (SAT) score, and one transcript from each college attended (if any). Masters program requires a total of 45 quarter units, including at least 23 units in graduate courses. A baccalaureate degree in an appropriate area of health or fulfillment of up to 14 units of core courses (depending on area of interest and experience) is prerequisite to entering the graduate program in Health and Safety Studies. Courses include Microbiology for Health Related Sciences, Basic Health and Safety Studies, Management of Medical Emergencies, Health Maintenance Problems, Medical Emergency Studies, Radiation Hazards in Health and Safety, Radiological Health, Health and Safety Law, Selected Topics in Health and Safety Studies, Health Studies on Dangerous Drugs and Narcotics/Alcohol and Tobacco, and Industrial Safety.

Charges: residents, $70/quarter for 6.1 or more units, $60/quarter for 0-6.0 units. Non-residents pay the above registration fees plus $38/unit up to a maximum of $570/quarter.

33 **CENTRAL WASHINGTON UNIVERSITY.** Central Safety Center. Hogue Technology Building, Room 301, Ellensburg WA 98926. (509) 963-3219. Contact: Dr. C. Duane Patton, Director, Central Safety Center.

Offers Bachelor of Science with Occupational Safety and Health major; the program is especially valuable for safety personnel, including administrators and fire fighters. Prerequisites include biology, algebra, physical and social sciences. Major courses include Business Law, Risk and Insurance, Management of Human Resources, Administrative Information Systems, Statistics, Personnel and Industrial Psychology, First Aid, Human Anatomy and Physiology, Accident Prevention, Occupational Safety and Health, Accident Investigation, and Industrial Processes and Materials. Fifteen credit hours of field experience or their equivalent are also required. The major requires 75 credit hours, including 9 hours of electives; a minor of 21 hours is also available. 180 credit hours are required for graduation.

Full-time tuition, general and activity fees: residents, $169/quarter, resident Southeast Asia Veterans, $120/quarter; non-residents, $453/quarter. Part-time (9 credit hours or less) residents or non-residents, $17/credit (maximum for resident Southeast Asia Veterans, $120/quarter).

34 **CLEMSON UNIVERSITY.** College of Industrial Management and Textile Science. Clemson SC 29631. (803) 656-3496. Contact: Boyd Joseph Todd, Ph.D., Head of Department of Industrial Management.

Offers B.S. in Administrative Management with Occupational Safety and Health major in preparation for careers in managing and planning industrial safety programs. Courses include Chemistry, Physical Science, Economics, Accounting, Statistics, Sociology, Computer Programming, Industrial Psychology, Scope of Occupational Safety and Health, Corporation Finance, Personnel Management, Industrial Accident Prevention and Loss Control, Risk and Insurance, Legal Environment of Business, Industrial Health Management, Management Information Systems, Fire Protection and Prevention, Managerial Decision Making, and Industrial Safety Management.

Tuition: residents, $415/semester; non-residents, $890/semester.

35 **COLUMBIA UNIVERSITY.** Department of Industrial Engineering and Operations Research, School of Engineering and Applied Science. 322 Seeley W. Mudd Building, New York NY 10027. (212) 280-2941/2935. Contact: Assistant Professor Robert Karasek.

Offers Master of Science in Industrial Engineering and Operations Research which allows students a course concentration in OSH. Such a program can include the following Engineering School and Public Health School courses: Occupational Health and Safety, Labor Relations, Job Stress and Job Redesign, Sound and Vibra-

tion, Noise Pollution (Measurement and Control), Noise Pollution (Engineering and Legal Aspects), Radiation Shielding, Special Problems in Nuclear Science and Engineering, and Environmental Control Technology. An undergraduate engineering background is advisable for this program.

Tuition: $164/credit up to $2,516/term.

36 **EAST CAROLINA UNIVERSITY**. Department of Environmental Health, School of Allied Health and Social Professions. Greenville NC 27834. (919) 757-6961. Contact: Trenton G. Davis, Dr.P.H., Chairman, Department of Environmental Health.

Offers B.S. in Environmental Health to produce professionals able to evaluate and control hazardous factors in air, food, and water supplies and to promote and administer industrial hygiene and safety programs. Courses include Accident Prevention, Air Pollution, Occupational Health, Environmental Epidemiology, Institutional and Recreational Area Sanitation Principles, Water Supplies and Treatment, Liquid and Solid Waste Treatment, and Environmental Health Management and Law. The B.S. requires 126 semester hours, including a minimum of 30 hours in the major field, 27 hours in biology, chemistry and physics, and 13 hours in social sciences. The M.S. in Environmental Health is designed to develop competency in environmental health management and its specialties. The program covers courses such as Environmental Engineering, The Work Environment, Topics in Environmental Health, Water and Sewer System Development, Technical Advances in Water Supply and Waste Treatment, Air Quality Control Methods and Devices, Environmental Health Program Management, Biostatistical Methods, and Epidemiology. Candidates are required to have a Bachelor's degree in Environmental Health or a related field and usually at least one year of work experience in environmental health. The M.S. requires 30 hours, and a minimum of 17 must be taken from the Department of Environmental Health.

Tuition: residents, $140/semester; non-residents, $1,000/semester.

37 **FERRIS STATE COLLEGE**. School of Technical and Applied Arts and School of Allied Health. Big Rapids MI 49307. (616) 796-9971. Contact: R. W. Allen, C.S.P., Assistant Professor, ext. 457, or Michael R. Tillotson, C.I.H., Assistant Professor, ext. 480.

Offers B.S. in Occupational Safety and B.S. in Occupational Health. The B.S. degree is a joint degree offered by the schools of Technical and Applied Arts and Allied Health. The B.S. Occupational Safety option requires 85 hours of core courses, 11 hours of related courses, 83 hours of general education, and 18 hours of electives for a total of 197 quarter hours. The B.S. Occupational Health option requires 76 hours of core courses, 8 hours of related courses, 104 hours of general

education, and 11 hours of electives. Course work for the degrees includes Toxicology, Systems Safety Analysis, Fundamentals of Industrial Hygiene, Vibration, Air Sampling and Analysis, Noise and Its Control, Ventilation, Laws and Regulations, Industrial Hygiene Control Methods, Loss Control Program Analysis, Principles of Accident Prevention, Environmental Radiation, and Methods and Principles of Safety Training. One quarter of internship is also required. Ferris also offers an A.A.S. program in Occupational Safety Technology which is described elsewhere in this section.

Tuition: residents, $23.20/credit hour; non-residents, 56.00/credit hour.

38 **GRAND VALLEY STATE COLLEGES. KIRKHOF COLLEGE.** 109 AuSable Hall, Allendale MI 49401. (616) 895-6611, ext 553. Contact: David Reynolds, Coordinator.

Offers a baccalaureate degree in Occupational Safety and Health Management for completion of 180 credits, an internship, and a demonstration of competency. The program requires 60 credits from the Occupational Safety and Health block, which includes Principles of Accident Prevention, Occupational Safety-Health Legislation, Chemistry for Safety Management, Human Health and Disease, Human Factors, Workmen's Compensation Legislation, Fire Prevention and Protection, Industrial Hearing Conservation, Safety Engineering, Product Safety, Safety Management, Basic Emergency Medical Training, Industrial Hygiene, and Physics for Safety Management.

Tuition: $18/credit hour.

39 **HUMBER COLLEGE.** College of Applied Arts and Technology, Technology Division. 205 Humber College Blvd., Rexdale, Ontario, Canada M9W 5L7. (416) 675-3111 ext. 378. Contact: Mr. J. A. Montgomery, P.Eng., Senior Program Co-ordinator, or Mrs. Joan Faubert.

Offers a six-semester program in Occupational Health and Safety Engineering involving approximately 2,400 hours of class time over a three-year span. Courses such as Total Loss Control, Occupational Health (Toxic Substances), Occupational Health (Physical Agents), and Safety Program Development are project-oriented courses and involve student activity outside of the class in business or industry settings of the student's choice. Other related courses are Fire Protection, Site Management, Process Industries and Plant Safety, First Aid, Operations Research, Environmental Pollution Control, and Product and Public Safety General Studies.

Tuition: Ontario residents, $183.50/semester; non-Ontario residents, $790.00/year. (Figures are in Canadian dollars.)

40 **INDIANA STATE UNIVERSITY.** Terre Haute IN 47809. (812) 232-6311. Contact: Dr. Herman Koren, Coordinator of Environmental Health Programs.

Offers B.S. in Environmental Health Science to train specialists in Environmental and Occupational Health. A total of 124 semester hours are required for the degree, including 46 hours in specialized courses, 8 hours of internships, and 27 hours of chemistry, algebra, physics, biology, and microbiology. Additional course work is available in higher level chemistry and other sciences. Environmental Health and Safety courses include Principles and Practices of Environmental Health, Epidemiology, Human Ecology, Accident and Disaster Control, Technical and Administrative Seminars in Environmental and Occupational Health, Biostatistics, Administration, and an Environmental and Occupational Health Practicum. Students may also take courses in Fire Protection, Toxicology, and other areas of safety as needed. The internship program consists of two fifteen-week periods in government or industry. All internships are paid by the employer but secured by the University. Since 1969, 470 interns have earned $1.7 million and have received 0.5 million hours of positive field experience.

Tuition: full-time residents, $434/semester; full-time non-residents, $826/semester; part-time residents, $28/semester hour; part-time non-residents, $59/semester hour.

41 **INDIANA UNIVERSITY SCHOOL OF MEDICINE.** Public Health Academic Programs, Division of Allied Health Sciences. 1100 West Michigan Street, BR 150A, Indianapolis IN 46223. (317) 264-3527. Contact: Dr. John M. Doty, Director of Public Health Academic Programs, or Dr. Wing T. Chan, Coordinator of Occupational Health and Safety.

Offers B.S. in Public Health with a major in Occupational Health and Safety for completion of 122 semester hours, including 50 credits in basic sciences, 9 credits in public health, 23 credits in industrial and engineering sciences, and 23 credits in occupational health. Undergraduate admission to the University requires high school graduation, rank in the upper half of the class, SAT or ACT scores, and completion of specific high school courses. Admission to the Occupational Health and Safety major occurs at the sophomore level and requires completion of specific freshman preprofessional course requirements with a minimum GPA of 2.0 (C) and a departmental interview. Students wishing to enter at the junior academic level must contact the program director for appropriate counseling to determine eligibility. Courses include: Epidemiology; Industrial Hygiene; Industrial Toxicology; Occupational Health Instrumentation; Radiological Health; Occupational Health Law; Occupational Health Practicum; Occupational Safety; Industrial Organization; Materials and Processes; Power Systems; Drafting; Applied Statics; Building Facilities Engineering; and Heating, Ventilation, and Air Conditioning. The Occupational Health training is offered by the Public Health Academic Programs, Division of

Allied Health Sciences, Indiana University School of Medicine; the safety and engineering training is completed at the Purdue University School of Engineering and Technology, located on the same campus.

Tuition: residents, $24/credit; non-residents, $55/credit.

42 **IOWA WESLEYAN COLLEGE.** Safety Administration Department, Division of Applied Sciences. Mount Pleasant IA 52641. (319) 385-8021. Contact: Thomas A. Shepardson, Department Head.

Offers B.S. in Safety Administration to prepare the graduate for a managerial approach to occupational safety and health administration. Interested students should submit high school transcripts or GED and Scholastic Aptitude or American College Test results. Of the 120 credit hours required for graduation, 51 are from the core curriculum, 20 are required support courses, and 30 are selected from safety administration courses, including Introduction to Safety Administration, Fire Protection and Prevention, Industrial Hygiene, Total Loss Control, Health Management Techniques, Legislation and Safety Administration, and Material Handling. A 6-12 hour internship is completed in the senior year.

Tuition: $1,365/semester or $80/credit hour.

43 **JOHNS HOPKINS UNIVERSITY.** Division of Environmental Health Engineering, School of Hygiene and Public Health. 615 North Wolfe Street, Baltimore MD 21205. (301) 955-3602. ERC Director: Gareth M. Green, M.D. Contact: Charles E. Billings, Ph.D., Director, Industrial Hygiene and Safety Program.

Offers Master of Health Sciences (M.H.S.), Master of Science (Sc.M.), Doctor of Science (Sc.D.), and Doctor of Public Health (Dr.P.H.) in Industrial Hygiene and Safety to candidates presenting GRE scores and an appropriate degree in the physical, chemical, or biological sciences, engineering, medicine, nursing, or social sciences. The program emphasizes the recognition, evaluation, and control of factors in the workplace which may cause illness or injury. M.H.S. and Sc.M. programs require completion of 64 credits over at least four academic quarters and provide broad education, training, and experience in the general practice of industrial hygiene and safety. Sc.D. and Dr.P.H.. programs include general practice and specific education and research in one or more scientific disciplines fundamental to industrial hygiene or safety plus an original research dissertation. Curricula for these programs include: Physiology; Toxicology; Occupational Health; Occupational Medicine; Biostatistics; Epidemiology; Industrial Hygiene; Principles, Measurements, and Controls; Environmental Chemistry; Environmental Law; Administration of Environmental Health Services; Air Pollution Control and Strategy; Industrial Ventilation; Legal and Social Implications of Environmental Health; and Physiological and Biological Effects of Air Pollution.

Tuition: full-time, $1,125/academic quarter; part-time, $94/credit. Students are also assessed a one-time matriculation fee of $160.

44 **KANSAS STATE UNIVERSITY.** Occupational Safety and Health Center, Department of Industrial Engineering, College of Engineering. Durland Hall, Manhattan KS 66506. (913) 532-5606. Contact: Professor J. J. Smaltz, Director.

The Center for Occupational Safety and Health offers graduate degrees in a variety of areas of specialization, depending upon the student's background. Entrance requirements and program of study are determined by the department involved, the student, and his advisory committee. If a student has a background in engineering, the program could lead to a degree in Mechanical or Industrial or any other engineering discipline, and degrees could be granted in Chemistry, Biology, or Toxicology to students with appropriate backgrounds. Courses related to Occupational Safety and Health currently offered in the various departments of the university include Design Ergonomics, Occupational Safety and Health, Man-Environment System, Human Factors Engineering, Fine Particle Technology, Environmental Engineering, Engineering Acoustics, Environmental Radiation, Radiation Protection Engineering, Radiation Shielding, Consumer Product Safety, Environmental Toxicology, Hearing Conservation and Rehabilitation, Audiology, and Health Appraisal.

Charges: residents, $348/semester for seven or more credits; $17/semester credit hour for six or less hours plus $66 fees. Non-residents: $843/semester for seven or more credits; $50/credit hour for six or less hours plus $66 fees.

45 **LAMAR UNIVERSITY.** Environmental Science Department. P.O. Box 10208, Beaumont TX 77710. Contact: Dr. Ewin A. Eads, Director.

Offers B.S. in Environmental Science, an interdisciplinary program in chemistry, biology, and civil engineering. The program emphasizes federal and state laws and regulations, especially those relating to the effects of petroleum, water, and sewage in industrial and commercial wastes. Courses include Environmental Health Engineering, Environmental Science and Environmental Health, Organic Chemistry, Inorganic Chemistry, Quantitative Analysis, Radiochemistry, Air Analysis, Terrestrial Ecology, Limnology, Microbiology, General Physics, Calculus, Epidemiology, Technical Report Writing, and Computer Science. A minimum of 124 hours are required for the degree, plus six semester hours of Physical Education/Band/ROTC, which is a University requirement. An M.S. in Environmental Chemistry is offered in addition to the B.S. degree in Environmental Science.

Charges (based on a 15-hour semester): residents, $205; non-residents, $745. Figures include fee for health services.

46 **MCNEESE STATE UNIVERSITY.** Department of Microbiology. Lake Charles LA 70609. (318) 477-2520, ext. 228. Contact: Dr. Victor Monsour.

Offers a baccalaureate degree and Master of Science in Environmental Science administered through the Department of Microbiology. B.S. requires 127 hours with core courses in english, mathematics, statistics, chemistry, physiology, and biology. Admission requires an accredited high school diploma or equivalent. Courses related to Health and Safety include Environmental Toxicology, Statistics Epidemiology, Air Pollution, Water and Wastewater, Public Health Microbiology, Microbiology of Foods, Nuclear Science, Solid Waste Disposal, Field Study, Environmental Impact Statements, Environmental Laws, Industrial Hygiene, Control and Measurements, and Occupational Health and Safety. M.S. degree requires 30-36 hours including courses in Solid Waste, Air Pollution, Chemical Stream Pollution, Biological Stream Pollution, Physical Pollution, Statistics, Research, Environmental Laws, Occupational Health and Safety, Environmental Impact Statements, and Public Administration. An optional thesis offering 6 credit hours is also available. Graduate program applicants must have a Bachelor's degree and must present GRE scores.

Charges: residents, $223/semester for 12 or more credits, $97-$213 for 3-11 credit hours. Non-residents pay the above fees plus $315/semester for 12 or more credits, or $105.00-283.75 for 4-11 credit hours. All students pay an additional fee of $27 for 0-6 credits or $63 for 7 credits or more.

47 **MERCY COLLEGE.** 555 Broadway, Dobbs Ferry NY 10522. (914) 693-7600. Contact: Andrew G. Nelson, Dean for Admissions.

Offers B.S. in Public Safety with a specialization in Occupational Safety and Health for completion of 120 credits. Courses include Safety Management, OSHA-Significance and Application, Special Hazards in Loss Control, Safety Education, Human Behavior and Hazard Control, Human Factors in Safety, Organization and Supervision of Safety Programs, Off-the-Job Safety: Outdoor Hazards, Industrial Hygiene, Problems in Environmental Health and Hygiene, and Psychology of Crisis. The College also offers an Associate in Science degree with a specialization in OSHA for completion of 60 credits and a Certificate in Public Safety or OSHA for completion of 15 credits. Certificate program is open to all qualified applicants whose academic preparation and/or appropriate work experience indicate potential for successful completion of the program.

Tuition: full-time, $1,800/year; part-time, $60/credit.

48 **METROPOLITAN STATE COLLEGE.** Department of Chemistry. 1006 11th Street, Denver CO 80204. (303) 629-2610. Contact: Dr. Fred M. Dewey, Occupational Health and Safety Program Coordinator.

Plans to offer a B.S. in Occupational Health and Safety beginning with the fall semester, 1979. The program, requiring 120 semester credits and an internship, will provide background and training necessary for the recognition, evaluation, and control of workplace hazards. Included in the curriculum are 41 semester credits of chemistry, 23 semester credits of other math and science courses, and 28 semester credits of occupational health and safety courses. Courses include Occupational Health and Safety, Industrial Toxicology, Industrial Safety, Instrumentation and Analysis in the Industrial Environment, Evaluation and Control of Air Quality, Occupational Safety and Health Legislation, and Occupational Health and Safety Management. Admission of transfer students requires a letter of application and transcript.

Tuition: full-time residents, $223/semester; full-time non-residents, $757/semester.

49 **MONTANA COLLEGE OF MINERAL SCIENCE AND TECHNOLOGY.** Environmental Engineering Department. Butte MT 59701. (406) 792-8321. Contact: Dr. Thomas Waring, Chairman, Occupational Safety and Health Program.

Offers B.S. in Occupational Safety and Health upon completion of 140 semester credits. The program provides insights into engineering, occupational safety, industrial hygiene, management, law, communications, and behavioral sciences. Courses include Inorganic Chemistry, Engineering Graphics, Psychology, Chemistry of Industrial Hygiene, Environmental Degradation, OSH, Human Anatomy and Physiology, Industrial Safety, Statistics and Probability, Industrial Hygiene, Computer, Industrial Toxicology, Air Sampling and Analysis, Environmental Sanitation, Industrial Graphics, Group Dynamics, Technical Writing and Reports, Environmental Seminars, Industrial Epidemiology, Environmental Law, Industrial Ventilation, Fire Protection, and OSH Management. Non-resident admission requires student to be in top 50% of high school graduating class and to take American College Test or equivalent.

Fees: full-time (12-18 credit hours) residents, $233.75/semester; full-time non-residents, $737.75/semester.

50 **NEW JERSEY INSTITUTE OF TECHNOLOGY.** Department of Industrial and Management Engineering, Graduate Division. 323 High St., Newark NJ 07102. (201) 645-5330. Contact: Professor Stanley Thomas, Associate Chairman of Graduate Programs.

Offers M.S. degree program with specialization in Health and Safety Engineering to train graduate engineers in the monitoring of the design of proposed facilities, in evaluation of products and services for potential liabilities, and in correction of unhealthy or unsafe occupational conditions. Applicants should have Bachelors

Degree in Engineering or Environmental Technology, although other majors may qualify by taking preparatory courses prescribed by advisor. Program consists of four required courses plus 15 credits of related electives, which may be selected from the graduate offerings of the New Jersey Institute of Technology, the Newark College of Arts and Science, Rutgers (the State University), or the New Jersey School of Medicine and Dentistry. Required courses include Legal Aspects of Health and Safety, Safety Engineering Methods, Elements of Occupational Health, and a Design thesis. Electives include Radioisotope Theory and Applications, Product Liability Control, Pollution: Chemistry and Ecology, Air Pollution Control, Behavioral Science, Man-Machine Systems, Human Design Factors in Engineering, Psychology in Engineering, Personnel Management, Industrial Measuring Systems, and Industrial Safety Administration.

51 **NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY.** Department of Safety and Driver Education. Greensboro NC 27411. (919) 379-7717. Contact: Dr. Isaac Barnett, Chairperson.

Offers B.S. in Occupational Safety and Health for completion of 129 semester credits. Admission requirements include high school transcript, physical examination, and the Scholastic Aptitude Test. Completion of high school algebra and chemistry are desirable. Opportunities are provided for insights into physical and life sciences, management, law, engineering, communications, behavioral sciences, occupational safety and health, and industrial hygiene. The program includes Engineering Graphics, Qualitative Analysis, Chemistry, Occupational Safety and Health, Industrial Safety, Statistics, Human Physiology, Industrial Hygiene, Industrial Toxicology, Air Sampling and Analysis, Fire Protection, Industrial Epidemiology, Psychology, and Industrial Ventilation. Core courses include Industrial Processes, Occupational Safety and Health, General Concepts in Occupational Safety and Health, Air Quality, Physical Exposure for the Safety Professional, Hazardous Materials, Flammable Materials, Materials Handling, Education/Training Methods for the Safety Professional, Evaluation and Control Methods in Occupational Safety and Health, and Management Techniques in Occupational Safety and Health.

Tuition: residents, $311.00/semester; non-residents $1,163.00/semester. Part-time (1-5 credits) residents, $71.80/semester; non-residents, $284.93/semester. Summer tuition: residents, $218.40; non-residents, $462.00.

52 **OREGON STATE UNIVERSITY.** Department of Health. Waldo Hall 321, Corvallis OR 97331. (503) 754-2686. Contact: Dr. Arthur Koski, Head of Department; Dr. David Lawson, Coordinator, Safety Studies; or Mr. William Anderman, Occupational and Environmental Health.

Offers B.S. options in Safety Studies and in Environmental Health. Undergraduate admission requires a high school diploma with minimum GPA of 2.5 on a 4.0

scale or its equivalent measured by testing. B.S. requires 192 quarter hour credits. Courses in the Safety Studies option include Accident Prevention, Employee and Industrial Health Practices, First Aid and Emergency Care, Fire Prevention and Control, Accident Hazards and Codes, Problems in Safety, Occupational and Industrial Hygiene, Safety Program Management, Field Experience in Safety, and supporting courses in physiology, business, and behavioral sciences. Courses in the Environmental Health option include Environmental Health, Applied Environmental Health, Institutional Hygiene, Noise and Solid Waste, Environmental Law, Community Health, Diseases, Biology of Radiation, Food Microbiology, Chemicals in the Environment, Soils and Land Use, Evaluation, Epidemiology, Physics, Chemistry (through Organic), Entomology, and a field experience. Students in Environmental Health are encouraged to take a minor in Safety Studies to expand employment opportunities.

Tuition: most recent entering class paid $262 for resident undergraduates and $878 for non-resident undergraduates for a full load (12-21 hours).

53 **OUR LADY OF HOLY CROSS COLLEGE**. Division of Business and Economics. 4123 Woodland Drive, New Orleans LA 70114. (504) 394-7744. Contact: Gerard E. Nistal, Division Chairman.

Offers B.S. in Occupational Safety and Health, with a minor in Business, upon completion of approximately 70 semester hours of upper-level coursework as part of a "two-plus-two" program. The initial two years stress Occupational Safety and Health technology and lead to the A.S. degree from Delgado Junior College. Admission to the B.S. program is also granted to students with similar credentials from any accredited junior or senior college or the equivalent in nontraditional education. The program is designed to prepare Occupational Safety and Health technologists for supervisory, compliance, enforcement, para-professional, and administrative positions and to provide an academic foundation for graduate study. Courses include Analytic Geometry and Calculus, Statistics, Biology, Physics, Electronic Data Processing, Economics, Principles of Management, Operations Management, Risk Management, Organizational Behavior, Business Law, OSHA Law, Government, Speech, Technical Writing, and Ethics. The Division of Natural Sciences is planning to add a baccalaureate curriculum in Industrial Hygiene to existing curricula in Allied Health and Biology. Our Lady of Holy Cross College enjoys an affiliation with the Gulf Coast Marine Science Research Laboratory.

Tuition and fees: full-time, $700 for 14 or more semester hours plus $50 college fee; part-time, $50/semester hour plus $25 college fee.

54 **PURDUE UNIVERSITY**. Institute for Environmental Health, Bionucleonics Department, School of Pharmacy and Pharmacal Sciences; and Environmental Engineering, School of Civil Engineering. West Lafayette IN

47907. (317) 494-8537. Contact: John E. Christian, Ph.D., Head, Bionucleonics Department, and Director, Institute for Environmental Health.

Offers B.S., M.S., and Ph.D. in Environmental and Occupational Health (including Radiological Health) and B.S., M.S. and Ph.D. in Engineering (Environmental Option). Undergraduate admission requires high school diploma, Scholastic Aptitude Test, and College Board Achievement Tests in English, Mathematics, and Chemistry. B.S. requires 128 credits, including 34 in a selected major area of concentration. Areas of concentration available include Radiological Health (Health Physics), Environmental Toxicology, Ecology, Environmental Engineering, and Industrial Hygiene. Graduate admission requires a background in science or engineering from an accredited college or university; the M.S. requires 24 hours plus a thesis, and the Ph.D. requires 54 credits and a thesis. The graduate program in Environmental and Occupational Health includes courses in Bionucleonics, Radiation Health Physics, Radiation Biology, Applied Bionucleonics, Environmental Surveillance, Environmental Engineering and Administration, Industrial Waste Disposal, Air and Water Pollution, Instrumental Analysis, Statistical Methods, Environmental Risk Assessment, Environmental Toxicology, and Environmental Quality. Additional electives (from the Department of Audiology and Speech Sciences) may include Assessment Audiology, Audiology and Audiometry, Advanced Audiometry, Noise and Man, Administration and Supervision in Audiology Programs, and Experimental Audiology: Psychoacoustics.

Tuition: full-time residents (8 or more hours), $435/semester; full-time non-residents, $1,050/semester. Part-time residents, $27/hour; part-time non-residents, $54/hour.

55 **SAINT AUGUSTINE'S COLLEGE.** Department of Chemistry. 1315 Oakwood Avenue, Raleigh NC 27611. (919) 828-4451 ext. 330. Contact: Mr. Roamless Hudson, Jr., P.O. Box 14.

Offers B.S. in Occupational Safety and Health to train industrial hygiene practitioners for government and industry. The program consists of the usual liberal arts courses plus a specialized curriculum centered around chemistry. The B.S. requires 120 credits for completion in the course of 36 months plus three summer sessions. All but six of the credits are from didactic courses, with the remainder coming from readings, conferences, and special topics. Courses include Readings in Industrial Hygiene, Elements of Industrial Hygiene, Industrial Hygiene Practices and Laboratory, Occupational Safety, Industrial Toxicology, and Air Sampling for Contaminants.

Tuition, fees, room and board: $1,600/semester.

56 **SALEM COLLEGE.** Industrial Technology Department. Salem WV 26426. (304) 782-5393/5262. Contact: Terry Haggerty, Chairperson.

Offers a B.S. in Engineering Technology for completion of 128 semester hours. Candidates should have a high school diploma or equivalent and should submit ACT scores. Degree requirements include two semesters of economics, two semesters of accounting, and a course in biology. Courses include Occupational Safety and Health, Industrial Hygiene, Electrical and Mechanical Hazards, Environmental Aspects of Safety, Industrial Safety and Loss Control, and Safety Program Management. Engineering Technology majors may choose two specialties from the following areas: Electronics, Environmental Control, Occupational Safety and Health, Operations Technology, Design Technology, and Industrial Maintainence. Salem also offers an A.S. degree in Engineering Technology with a specialty in Occupational Safety and Health which is described elsewhere in this section.

Tuition: $1,300/semester.

57 **TEMPLE UNIVERSITY.** Center for Environmental Studies, School of Pharmacy. 3307 N. Broad Street, Philadelphia PA 19140. (215) 221-4915. Contact: Dr. Samuel Elkin.

Offers M.S. in Environmental Health with Occupational Health Training Program for applicants who present letters of recommendation and Graduate Record Exam scores and who have backgrounds in chemistry and biology. The program lasts 12 months and involves lectures, demonstrations, laboratory work, field trips, conferences, a second semester externship, and a summer internship in industry or government. Courses include Biostatistics, Isotope Methodology, Medical Aspects of Occupational Health, Industrial Hygiene, Analytical Instrumentation, Seminar in Occupational Health, Industrial Safety, Environmental Toxicology, Industrial Ventilation, Engineering Aspects of Air Pollution Control, Computer Programming and Application, Management and Organization Behavior, and Epidemiology. A limited number of fellowships are available through the financial support of NIOSH.

Tuition: full-time (9-14 credit hours) residents, $875/semester plus $75/credit beyond 14 credits. Full-time non-residents, $1,550/semester plus $100/credit beyond 14. Part-time residents, $75/semester hour; part-time non-residents, $100/semester hour.

58 **TEXAS A&M UNIVERSITY.** Department of Industrial Engineering. College Station TX 77843. (713) 845-5531. ERC Director: Marcus M. Key, M.D. Contact: Ralph J. Vernon, Ph.D., Assistant Department Head, Industrial Hygiene and Safety Engineering Division.

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As part of the program of the University of Texas ERC, Texas A&M offers a B.S. in Safety Engineering. Undergraduate admission requires high school graduation or equivalent and College Board Scholastic Aptitude, English Composition and Math Achievement Tests. The program of study requires 138 semester credits and includes mathematics through differential equations, engineering mechanics, thermodynamics, fluid mechanics, engineering analysis, human physiology, and 36 semester credits devoted to safety engineering, industrial hygiene engineering, fire protection, human factors, and radiation protection. Courses include Principles of Safety Engineering, Industrial Hygiene Engineering, System Safety Analysis, Industrial Safety Engineering, Fire Protection Engineering, Product Safety Engineering, Evaluation and Control of the Occupational Environment, and three analysis and design courses. Accreditation by the Engineering Council for Professional Development will be sought in 1979.

Texas A&M also offers an M.S. in Industrial Hygiene for completion of 32 semester credits, a research thesis, and a comprehensive oral examination. Required courses include Industrial Safety Engineering, Industrial Hygiene, Instrumentation for Industrial Hygiene, Evaluation and Control of the Occupational Environment, Industrial and Environmental Toxicology, Human Physiological Response, and Statistical Analysis. Courses in Acoustics and Noise Control, Industrial Ventilation, Epidemiology, and Radiation Protection are available.

Texas A&M also offers an M.S. in Safety Engineering for completion of 32 semester credits, a research thesis, and a comprehensive oral examination. Required courses include Industrial Safety Engineering, Industrial Hygiene, Human Factors Engineering, Product Safety Engineering, Safety Engineering in Facilities Design, System Safety Engineering, Human Physiological Response, and Statistical Analysis. Additional courses include Safety in Materials Handling, Safeguarding Mechanical Systems, and Human Relations in Industry.

Texas A&M also offers a Ph.D. in Industrial Engineering with major emphasis in Industrial Hygiene Engineering, Safety Engineering, Human Factors Engineering and Fire Protection Engineering. The program provides opportunities to include study in other fields of engineering, business administration, chemistry, and other disciplines. Required courses include Advanced Quality Control, Principles of Operation Analysis, Engineering Man-Machine Interface and a selection of courses identified in the Masters programs in Industrial Hygiene and Safety Engineering. Graduate admission requires a baccalaureate degree in engineering or physical or biological science, GRE combined score (verbal and quantative) in excess of 800 and an undergraduate GPA in excess of 2.5 for the last 60 hours of undergraduate study. Other requirements include math through integral calculus, two semesters of physics and three semesters of chemistry, including organic.

Charges: residents, $4/credit hour (minimum $50) plus $144/semester in fees; non-residents, $40/credit hour plus $144/semester in fees.

59 **TEXAS TECH UNIVERSITY.** Department of Industrial Engineering, College of Engineering. P.O. Box 4130, Lubbock TX 79409. (806) 742-3543. Contact: Dr. Jerry D. Ramsey, Professor, or Dr. M. M. Ayoub, Horn Professor.

Offers M.S. and Ph.D. in Industrial Engineering with a specialty in Occupational Safety and Health or Ergonomics; a thesis or dissertation is required for each program. Minimum score of 1000 on GRE and GPA of 2.75 are required of all applicants. Core courses include Systems Safety Management, Ergonomics, Occupational Environments, Work Physiology, Anatomy and Physiology, Industrial Biomechanics and Engineering Anthropometry, Human Mechanics, Environmental Toxicology, Industrial Ventilation, Epidemiology, Safety Engineering, and Construction Safety. Other courses offered are Experimental Design, Biomedical Engineering, Instrumental Analysis for Air Pollutants, Labor Law, Work Analysis and Design, Man-Machine Systems, Manufacturing Processes, and Biotechnology and Human Performance.

Tuition: residents, $4/credit; non-residents, $40/credit.

60 **TULANE UNIVERSITY.** Department of Environmental Health Sciences, School of Public Health and Tropical Medicine, 1430 Tulane Ave., New Orleans LA 70112. (504) 588-5374. Contact: Dr. Andrew J. England, Chairman, Department of Environmental Health Sciences.

Offers a Master of Science in Public Health (M.S.P.H.) for completion of 50 hours of graduate work and a Master of Public Health (M.P.H.) for completion of 52 hours. Both programs include 4 hours of directed research, a thesis, and a comprehensive examination. Applicants should have recent baccalaureate degrees in life sciences, engineering, or a related field and must submit college transcripts, Graduate Record Exam scores, two letters of recommendation, and a statement of career goals. The program includes 30 hours of core courses in Environmental Health Service Management, Environmental Health and Safety, Radiological Health, Occupational Health, Epidemiology, Biostatistics, Design and Analysis of Experiments, Water Quality Management, Environmental Chemistry, Environmental Biology, Air Pollution, Homeostasis, and Environmental Insult. The elective block in Occupational Health consists of 16 additional credits in Planning Aspects of Occupational Safety and Health, Accident Prevention, Toxicology, Radiation Hazards, Industrial Hygiene, Acoustic Noise Control, and Ventilation and Air Cleaning.

Charges: tuition, $150/semester hour, plus $50/semester activity fee.

61 **UNIVERSITY OF ARIZONA.** Arizona Center for Occupational Safety and Health (ACOSH), Health Sciences Center. Tucson AZ 85724. ERC Director: Herbert K. Abrams, M.D., M.P.H. Contact: John D. Repko,

Ph.D., Coordinator, Undergraduate Program, (602) 626-6835, or Mark D. Van Ert, Ph.D., Director, Industrial Hygiene Program, (602) 626-4249.

Offers B.S. in Health Sciences with major in Occupational Safety and Health, with a specific concentration in Industrial Hygiene or Industrial Safety. In their first two years, students are required to complete 68 units (with emphasis in science) in the College of Liberal Arts with a minimum GPA of 2.25 prior to admission to the School of Health Related Professions. Participants in the second two years of the program receive specialized training in recognizing, evaluating and controlling environmental hazards through a variety of core courses including Epidemiology, Health Statistics, Medicine, Instrumental Methods and Analysis, Environmental Air Pollution, Industrial Toxicology, Toxicology of Household Products, Occupational Safety and Health, Industrial Hygiene Instrumentation, Physical Exposure, Human Factors in Engineering Design, Flammable Materials, Materials Handling, and Independent Study. Field trips and summer internships are provided in local industries to provide students with practical experience.

Tuition: full-time Arizona residents, $225/semester or $32/unit; non-residents, $1,030/semester or $43/credit unit. Tuition scholarships are available to qualified outstanding students in junior and/or senior years.

62 **UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN**, Department of Health and Safety Education, College of Applied Life Sciences, 120 Huff Gymnasium, Champaign IL 61820, (217) 333-2307. Contact: Dr. William H. Creswell, Jr., Head, Department of Health and Safety Education, or Dr. Rudolf G. Mortimer, Coordinator, Safety, (217) 333-0173.

Offers B.S. in Health and Safety Education with options in School Health and Safety Education, Community Health Education, and Public Safety Education; M.S. in Health and Safety Education with options in School or Community Health Education or Safety Education; and Ph.D. in Health and Safety Education. B.S. requires 128 semester credits, M.S. usually requires a year and eight units of coursework and a thesis, and Ph.D. takes about three years beyond the M.S. (16 units beyond the Masters Degree) and requires a dissertation which can account for eight units of thesis research. Courses for these degrees include Epidemiology, General Safety Education, Health Data Analysis, Psychology of Accident Prevention, Problems in Public Health, Problems in Safety and Traffic Safety, Driver Education, Safety Engineering, Industrial Safety, Special Projects in Safety, Aviation Safety, Man-Machine Systems, Ergonomics, Ergonomics Laboratory, Research Methods, and Statistics.

Tuition, service fee, and hospital medical-surgical fees: residents, $175-$422/semester, depending on course load; non-residents, $391-$1,038/semester, depending on course load.

63 **UNIVERSITY OF MIAMI.** Department of Industrial Engineering, School of Engineering and Architecture. Coral Gables FL 33124. (305) 284-2344. Contact: Dr. Tarek M. Khalil, University Box 8294.

Offers B.S. in Industrial Engineering with an Occupational Safety and Health option, a post-baccalaureate Certificate of Proficiency in OSH, and M.S. degrees in Industrial Engineering with an OSH option as well as an interdisciplinary M.S. in Environmental Health and Safety jointly sponsored by the School of Medicine and the School of Engineering and Architecture. The program prepares practitioners for industry, insurance, and government; agricultural workers' safety and health are emphasized. Special efforts are made to recruit trainees from minority groups. The B.S. program requires high school or Associate degree grade average of C; applicants for the Certificate program must either have a baccalaureate degree in engineering, basic sciences, or health-related fields, be registered professional engineers or certified safety personnel, or present evidence of preparation in OSH. The M.S. applicants must have a grade average of B and a combined score of 1,000 on the aptitude part of the GRE. The M.S. degree requires 36 credits in the no-thesis option and 30 credits in the thesis option. Courses in the undergraduate and certificate programs include Industrial Security; Industrial Safety Engineering; Product Safety Engineering; Accident Prevention Systems; Man-Machine Systems; Industrial Hygiene; Industrial Toxicology; Methods Engineering; Manpower Systems; Production Systems; Systems Analysis Applications; and Statistics. Courses in the M.S. programs include Occupational Biomechanics; Biostatistics or equivalent; Industrial Hygiene; Toxicology; Integrated Aspects of Environmental Health; Fundamentals of Epidemiology and other engineering and technical courses for selection by the student with the approval of his advisor.

Tuition: full-time (12-18 credits) undergraduates, $1,850/semester or $90/credit; full-time (12-15 credits) graduate students, $1,900/semester or $146/credit.

64 **UNIVERSITY OF MICHIGAN.** Department of Industrial and Operations Engineering, College of Engineering, 3260 G. G. Brown Laboratory, Ann Arbor MI 48109. (313) 763-2245. Contact: Dr. Don B. Chaffin, Director, Occupational Health and Safety Engineering Program.

Offers M.S. in Industrial and Operations Engineering with Occupational Health and Safety Engineering Option. The M.S. program requires 30 credits for coursework in Environmental and Industrial Health and in Industrial and Operations Engineering; degree requirements can be completed in one year. Additional advanced courses are available to provide a Ph.D. in the field for students who have completed a B.S. program in engineering or science. Courses include Environmental Physiology, Industrial Hygiene, Engineering Measurement Methods, Safety Management, Engineering Data Analysis, Human Factors in Engineering Systems, Biomechanics and Physiology of Work, Safety Design Engineering and Industrial Accident Preven-

tion, Principles of Environmental Health, and a Seminar in Statistical Issues in Occupational Safety and Health Engineering.

Tuition: residents, $636/term; non-residents, $1,650/term.

65 **UNIVERSITY OF NEW HAVEN.** Occupational Safety and Health Program, School of Professional Studies and Continuing Education. 300 Orange Avenue, West Haven CT 06516. (203) 934-6321. Contact: Joseph J. Arnold, Program Director, or Ahmed R. Mandour, Dean.

Offers a B.S. major in Occupational Safety and Health to graduates of accredited secondary schools or persons who have passed the high school equivalency test who submit SAT or ACT scores. The B.S. degree program requires 128 semester hours, including courses in English, Mathematics, Chemistry, Physics, Biology, Occupational Safety and Health, Psychology, Industrial Engineering, Sociology, Fire Science, Environmental Chemistry, Radiation Safety, Thermal Physics, Accident Conditions and Controls, OSH Legal Standards, Manufacturing Processes, General Environmental Health, Industrial Hygiene Technology, Principles of Experimental Toxicology, and Ventilation. The University also offers an A.S. degree in Occupational Safety and Health which is described elsewhere in this section.

Charges: $1,286/semester for 12-18 hours plus $45 fees; $85.75/credit for less than 12 hours, $60/credit for more than 18 hours. Part-time or evening students, $60/credit hour up to 12 hours.

66 **UNIVERSITY OF ROCHESTER.** Department of Radiation Biology and Biophysics, School of Medicine and Dentistry. Rochester NY 14642. (716) 275-3891. Contact: Dr. James R. Coleman, Associate Director for Education.

Offers M.S. and Ph.D. in Radiation Biology with specialization in Radiation Biology and Environmental Science. M.S. requires 30 credits and a thesis, and Ph.D. requires 90 credits and a dissertation. Applicants must have a bachelor's degree in one of the basic sciences, and one college-level general course in biology and in physics, chemistry through organic, and mathematics through calculus and differential equations. Core courses include General Biochemistry, Introduction to Research, Cellular and Molecular Radiobiology, Laboratory Methods in Biochemistry and Biophysics, Radiation Physics, Introduction to Biophysics, Physics and Chemistry of Energy Sources and Products, Pathobiology of Radiation and Chemical Toxicants, and Statistical Analysis.

Tuition: $147/credit hour or $4,400/year. All students accepted by the Department will be considered for financial support.

67 **UNIVERSITY OF WASHINGTON.** Department of Environmental Health, F461 HSB, SC-34, School of Public Health and Community Medicine; and Radiological Sciences Group, SB-30, Graduate School. Seattle WA 98195. (206) 543-4252. ERC Director: John T. Wilson, Jr., M.D. Contact: Peter A. Breysse, Associate Professor, Dept. of Environmental Health; or Kenneth L. Jackson, Ph.D., Chairman, Radiological Sciences Group, (206) 543-2084.

Offers B.S. in Environmental Health with emphasis on Industrial Hygiene and Safety. Required courses include Methods in Environmental Sampling and Analysis, Measurement and Control of Air Pollution, Industrial Hygiene and Safety, Industrial and Safety Laboratory, Noise and the Environment, Accident Prevention, Laboratory Management and Safety, Environmental Research Design, Environmental Health Programs, Field Studies in Technology, and Undergraduate Research.

The Industrial Hygiene and Safety program also offers an M.S. in Environmental Health to provide technical knowledge and skills in both Industrial Hygiene and Industrial Safety and to prepare graduates for program planning, administration, and management in both disciplines. Applicants should have a baccalaureate degree in engineering, physical science, biological science, or environmental health and should present Graduate Record Examination scores. The program lasts six quarters and requires a minimum of 60 credits, plus nine additional credits for a thesis. A summer internship in industrial hygiene and safety in industry, government, or labor programs is required for all students without at least two to three years of relevant experience. Throughout the curriculum every effort is made to combine concepts of industrial hygiene and safety and to integrate the approaches to practical problems. Students may elect a thesis topic in industrial hygiene, safety, or a combined industrial hygiene-safety area. Required Industrial Hygiene courses include Industrial Hygiene, Industrial Hygiene Instrumentation Laboratory, Industrial Hygiene Chemistry Laboratory, Recognition and Control of Industrial Carcinogens, Toxicology, Industrial Ventilation, Biostatistics, and Epidemiology. Required Industrial Safety courses include Organizing Industrial Safety Programs, Techniques of Industrial Safety Administration, Machine Guarding, Electrical Safety, Fire Protection Engineering, Behavioral Foundations in Safety, Protective Equipment, Work in Confined Spaces, and Problems of Industrial Hygiene and Safety in Industry.

The University also offers an M.S. in Radiological Sciences with options in Physical Science, Environmental Science, and Biological Science. Students may complete the degrees at the Seattle campus or in Richland, Washington, at the Joint Center for Graduate Study, operated by the University of Washington and Oregon State and Washington State Universities. Applicants should hold degrees in physical science, biology, or engineering. M.S. requires 40-43 credits and a thesis, and courses include Radiochemical Techniques and Radioactivity Measurements, Anatomy and Physiology, Biological Effects of Ionizing Radiation, Radiation Hazards Analysis and Control, and Radiation Dosimetry. Training leading to the doctoral degree is available through special individual Ph.D. programs.

Tuition: undergraduate residents, $229/quarter, non-residents, $798/quarter; graduate student residents, $257/quarter, non-resident graduate students, $912/quarter.

68 **UNIVERSITY OF WISCONSIN-MADISON.** Graduate Program, Department of Curriculum and Instruction, School of Education. Teacher Education Building, 225 North Mills Street, Madison WI 53706. Contact: Professor Frazier Damron, Safety Education Studies Program, (608) 263-4645, or Professor Warren Southworth, Health Education Studies Program, (608) 263-4646.

Offers M.S. and Ph.D. with a major emphasis in Occupational Safety Education or a dual emphasis in Occupational Safety and Health Education. Admission is based on appropriate undergraduate studies and performance and acceptance of a candidate by a faculty member who agrees to serve as the major professor. Courses include: History and Philosophy of the Safety Movement; Educational Principles for Injury and Loss Control; Behavioral Safety Approach through Educational Process; Safety Communications; Organization of Safety and Health Education Programs; Issues in Safety and Health Education; Field Studies in Occupational Safety and Health; Independent Reading and Research; Management of Safety and Health Programs; Laboratory Safety and Health Problems; Emergency Preparedness Principles and Practices for Occupational Settings; Seminars in Issues, Evaluation Design, Research Procedures; Field Studies in Occupational Safety and Health Education; Principles of Risk Management; Personnel Management; Industrial Psychology; Theories of Persuasion; Communication Theory; Noise Origin and Control; Environmental Toxicology; Epidemiology; Human Factors Engineering; and Product Safety.

Graduate Tuition: residents, $572.50/semester, $71.50/credit; non-residents, $1,792.50/semester, $224.00/credit.

69 **UTAH STATE UNIVERSITY.** Departments of Biology and Industrial Technology, Colleges of Science and Engineering. UMC 53, Logan UT 84322. (801) 752-4100. ERC Director: William N. Rom, M.D., M.P.H., (801) 581-5719. Contact: Dr. Robert Parker, Occupational Safety and Health Program Coordinator, Biology Department.

As part of the program of the Rocky Mountain Center for Occupational and Environmental Health Educational Resource Center, Utah State offers a B.S. in Occupational Safety and Health and a B.S. in Engineering (usually Civil or Mechanical) with a minor in Occupational Safety and Health. Both programs require 186 quarter hours including an internship in industry. Interested students are encouraged to take preparatory courses in science and mathematics. Courses for both programs include Industrial Safety, Fire Protection and Prevention, Safety and Health Management, Transportation Safety, Epidemiology, Industrial Hygiene, Industrial Hygiene Field Methods, Environmental Health, Radiation Safety, and Safety Field Methods.

Charges: residents, $201/quarter (10-20 credits); non-residents, $524/quarter; foreign students, $534/quarter.

70 **WRIGHT STATE UNIVERSITY.** Department of Biological Sciences, College of Science and Engineering. Dayton OH 45435. (513) 873-2655. Contact: Professor James D. Lucas, Environmental Health Coordinator.

Offers B.S. in Environmental Health in order to produce professional public health or industrial environmentalists able to control hazardous factors in air, food, and water supplies and to promote and administer hygiene and safety programs. The purpose of the Occupational Safety and Health program is to prepare first-line practitioners of safety management for a wide variety of employment opportunities. Courses directly applied in OSH include Safety Management, Industrial Hygiene, Air Pollution, Solid Waste, Epidemiology, Radiation Techniques, Occupational Health and Safety, and Environmental Health. A field internship program, operated in cooperation with participating environmental health agencies and industries, provides an opportunity for practical experience in a working situation. Courses emphasize a problem-solving approach. The degree program requires a total of 198 quarter hours.

Tuition: residents, $290/quarter; non-residents $620/quarter.

PROGRAMS IN OCCUPATIONAL SAFETY

Associate Degree and Certificate Programs

71 **CALIFORNIA STATE UNIVERSITY, LONG BEACH.** Department of Industrial Technology, School of Applied Arts and Sciences. 1250 Bellflower Blvd., Long Beach CA 90840. (213) 498-4271. Contact: Jim Cannon, Coordinator of the Certificate Program in Safety Operations.

Offers a Certificate in Safety Operations to junior and senior baccalaureate candidates who have completed prerequisite classes in mathematics, chemistry, and physics. Courses include Materials of Industry, Industrial Safety, Industrial Supervision, Production Analysis, Systems Safety, Industrial Hygiene, Quality Assurance, Manufacturing Processes, Manpower Management, and Consumer Health Science. Each course carries three semester units; a total of 24 units are required for the Safety Operations Certificate.

Fees: full-time (6.1 units or more) residents, $105/semester; part-time (1-6 units) residents, $87/semester. Non-residents, $57/unit to a maximum of $855/semester for 15 or more units.

72 **CHATTANOOGA STATE TECHNICAL COMMUNITY COLLEGE.** Nuclear Technology Program, Department of Engineering Technologies. 4501 Amnicola Highway, Chattanooga TN 37406. (615) 622-6262 ext. 340/341. Contact: Mr. Donald Stone, Assistant Professor.

Offers A.S. in Nuclear Technology for completion of 103 credits to high school graduates interested in radiation protection and health physics as a primary emphasis. The program requires one year of Physics, one year of Chemistry, Algebra through Calculus, Computer Science, and Humanities course work. Other courses include Atomic Physics, Nuclear Technology, Radiation Protection and Radiological Health Administration, Nuclear Physics, Interactions of Radiation with Matter, Radioisotopes, Health Physics, and Radiation Physics Problems. Financial aid is available.

Tuition: residents, $84/quarter; non-residents, $396/quarter.

73 **CINCINNATI TECHNICAL COLLEGE.** 3520 Central Parkway, Cincinnati OH 45223. (513) 559-1520 ext. 184. Contact: Joseph L. Theisen or Bea Stewart, Coordinators of Safety/Risk program.

Offers an Associate Degree in Safety/Risk Management. The program is designed for safety practitioners in occupational hazard control, which includes the fundamentals of accident prevention as well as federal regulations (the Occupational Safety and Health Act and National Fire Protection Codes). The 103-credit degree program includes courses in: Safety Management; Safety Training Methods and Techniques; Industrial Hygiene Recognition, Measurements, and Control; and Vehicle Safety. The non-technical courses cover such areas as communication skills and report writing, math, business law, human relations and first aid.

Charges: residents, $15/credit; non-residents, $22/credit.

74 **CITY UNIVERSITY OF NEW YORK, COLLEGE OF STATEN ISLAND.** Mechanical Technology Department. 715 Ocean Terrace, Staten Island NY 10301. (212) 390-7644. Contact: Professor John Antonopoulos or Dr. Nathan Weiner.

Offers Associate in Applied Science in Safety Technology to holders of high school diploma or GED equivalency. Graduates qualify in Occupational Safety and Health positions and are capable of evaluating, recognizing and controlling occupational hazards in business or industry and of advising on compliance with OSHA regulations. The program requires 64 credits, and courses include Safety Technology, Accident Prevention, Industrial Hygiene, Fire Protection, Construction Safety, Consumer Protection and Product Liability, Industrial First Aid, Cardiopulmonary

Resuscitation, and Safety Organization and Administration. Other courses required in the program are taken among the following areas: business, management, economics, industrial management and control, probability, and statistics. General requirements include English, mathematics, and electives of selected areas from science, philosophy, sociology, or computer science. The Safety Technology program is offered during the day session, evening session, and weekend college. Students can take the safety courses on a non-credit basis through the Continuing Education Office at the College of Staten Island.

Tuition: full-time residents, $387.50/semester; part-time (less than 12 credit hours) residents, $35.00/credit hour.

75 **CLARK COUNTY COMMUNITY COLLEGE.** Public Service Department. 3200 East Cheyenne Avenue, North Las Vegas NV 89030. (702) 643-6060. Contact: Mary Burnett, Chairperson, Public Service Department.

Offers Certificate and Associate degree in Occupational Safety. Certificate requires completion of 30 semester hours in Communications, Safety and Health, Industrial Technology, Industrial Hygiene, Accident Investigation, Inspection Methods, Industrial Safety, System Safety Analysis, and Safety Motivation and Training. Associate in Applied Sciences is awarded for completion of an additional 30 hours in science and math, social science, U.S. and Nevada Constitutions, and electives. In order to make programs available to as many qualified adults as possible, admission and registration procedures are designed to be flexible enough to meet individual needs.

Tuition: $13/credit hour.

76 **COGSWELL COLLEGE.** Safety and Fire Protection Department. 600 Stockton Street, San Francisco CA 94108. (415) 433-1994. Contact: Gene Brem or the Director of Admissions.

Offers Associate degree in Safety Engineering Technology for completion of 97 quarter credits; the program is open to holders of a high school diploma or equivalent. Completion of the program qualifies students for certification as Associate Engineering Technicians by the Institute for the Certification of Engineering Technicians. Courses include Industrial Safety, Physical Hazard Control, Industrial Hygiene, Drafting, Physics, Calculus, Industrial Chemistry, Strength of Materials, Computer Programming, Statics, Thermodynamics, Fire Technology, Fluid Mechanics, Industrial Electricity, Industrial Psychology, Risk Management, Economics, Accounting, Statistics, Building Design, Industrial Organization, and Business Law. A special assistance program offers help to those with science deficiencies.

Cogswell also offers a baccalaureate program in Safety Engineering Technology which is described elsewhere in this section.

Tuition: full-time, $650/quarter (12-21 credits); part-time, $58/credit.

77 **DETROIT INSTITUTE OF TECHNOLOGY.** School of Technology and Applied Sciences, Occupational Safety and Health Program. 2727 Second Avenue at Cass Park, Detroit MI 48201. (313) 962-0830 ext. 328. Contact: Gerald E. Johnson, Coordinator and Lecturer, Occupational Safety and Health Program.

Offers Certificate and A.S. degree programs to high school graduates or candidates who have successfully completed the GED examination. The certificate degree is offered in Safety for completion of 27 semester credit hours (9 courses). The A.S. is offered in Occupational Safety and Health for completion of 66 credit hours. Courses include Industrial Safety, Construction Safety, Safety Management, Industrial Hygiene, Accident Investigation, Safety Investigation Research, Fire Protection and Prevention, Laws and Regulations, Principles and Techniques of Machine Guarding, and Survey of Safety and Health. The Department of Community Service also offers short non-credit courses, workshops, and seminars in Safety and Health for safety professionals, industrial supervisors, and union personnel. The Detroit Institute also offers a B.S. program in Safety Management and Safety Engineering which is described elsewhere in this section.

Tuition: residents, $64/credit hour (normal load 12-16 hours); non-residents, $859/semester.

78 **MADONNA COLLEGE.** Occupational Safety and Health/Fire Science Program, Division of Natural Sciences and Mathematics. 36600 Schoolcraft Road, Livonia MI 48150. (313) 591-1200. Contact: Dr. Edward D. Meyer, Chairman, Division of Natural Sciences and Mathematics.

Offers Certificate and Associate degree in Fire Protection and Occupational Safety. The Certificate requires one year and 30 semester credits in major courses and approved electives; A.S. requires two years and 30 additional credits in general education electives. Admission to all programs requires high school transcript or General Education Development (GED) results and Scholastic Aptitude or American College Test scores, if available. Courses include: Occupational Safety and Health; Principles of Building Construction and Building Codes; Hazardous Materials; Investigations; Accident Statistics and Corporate Management; Safety Programs and Program Management; Safety and Health Standards, Codes, and Regulations; Industrial Hygiene; Physical Hazards and Controls; and Industrial Fire Prevention and Protection. Up to nine credits may be awarded for an applicant's

acquired knowledge, training, and field experience in safety and/or fire fighting. Madonna College also offers a B.S. program in Fire Protection and Occupational Safety which is described elsewhere in this section.

Charges: $42.00/semester hour.

79 **SOUTHERN TECHNICAL INSTITUTE.** Electrical Engineering Technology Department. 534 Clay Street, Marietta GA 30060. (404) 424-7371. Contact: J. Rod Lee, J.D., Associate Professor and Acting Head of Fire Science Technology.

Offers an Associate Degree in Engineering Technology with an option in Nuclear Safety, which places emphasis on electronic and nuclear safety in the 103-quarter-hour program. Entrance requires a high school diploma or equivalent (GED), and each entering student must take the SAT. Required courses include Circuit Analysis, Semiconductor and Electronic Devices, Nuclear Radiation, Computer Fundamentals, Reactor Technology and Health Physics, Pulse and Digital Circuits and Applications, and Applied Health Physics. Additional courses in Chemistry, Physics, Math, Calculus, Composition and Rhetoric, Public Speaking, Technical Writing, History, and Drawing are also included.

Charges: residents, $12.00/quarter hour; non-residents, $32.00/quarter hour; each student that takes more than 5 quarter hours must pay student activity and health service fees of $24.50.

80 **TULSA JUNIOR COLLEGE.** 909 South Boston Avenue, Tulsa OK 74119. (918) 587-6561 ext. 172 or 173. Contact: Dorothy Watson, Chairman, Cultural and Social Services Division.

Offers Associate in Applied Science and Certificate of Achievement in Safety Technology for completion of 60 (A.A.S.) and 24 (Certificate) semester hours. The college practices open admission and admits anyone who holds a high school diploma or equivalent or who is 18 years of age or older. Major courses include Safety Management, Safety Codes and Regulations, Occupational Health, Loss Control Techniques, Motor Fleet Safety Management, Occupational Health Techniques, Fire Prevention Theory and Application, and Fire and Safety Hazards Recognition.

Charges: $7.75/credit plus $2.00/semester hour activity fee.

81 **UNIVERSITY OF CINCINNATI, UNIVERSITY COLLEGE, CLIFTON CAMPUS.** Department of Psychology and Sociology, 431 French Hall, Cincinnati OH 45221. (513) 475-2103/6082. Contact: Dr. Purcell Taylor, Department Head.

Offers an A.A.S. degree and a Certificate in Safety Risk Management. Applicants should have a high school diploma or equivalent from an accredited high school. Special requirements for admission include four years of high school English, two years of science, and one year of algebra. Those students who do not meet the above requirements must take basic mathematics and algebra plus one physical science course, general chemistry, or biology for three quarters in the University of Cincinnati summer school prior to direct admission to this program. The core courses include: Fire Science; Loss Control and Security Administration; Risk Management; Environmental Controls; Industrial Hygiene-Recognition; Industrial Hygiene-Evaluation; Industrial Hygiene-Control; Industrial Hygiene-Laboratory; Occupational Safety and Health; Safety and Health Standards, Codes, and Regulations; Safety Program Management; Safety Management in Special Industries; Safety Motivation and Training Techniques; Hazard Recognition and Control; Accident Prevention and Inspection Techniques; and a Special Topics Seminar.

Charges: full-time residents, $320/quarter; part-time residents, $27/credit hour. Full-time non-residents, $760/quarter; part-time non-resident, $64/credit hour.

82 **UNIVERSITY OF IDAHO. IDAHO NATIONAL ENGINEERING LABORATORY (INEL) EDUCATION PROGRAM.** Special Programs Office. Moscow ID 83843. (208) 526-1388. Contact: INEL Education Program, P.O. Box 1625, Idaho Falls, ID 83401.

Offers Certificate in Industrial Safety for completion of 30 credit hours to qualified employees of the Department of Energy and DOE contractors at INEL. Courses include Industrial Fire Protection, Environmental Health, Operational Safety, and Health Physics in Industrial Safety. Graduate and undergraduate students must furnish transcripts from all colleges and universities attended. Undergraduate students must also have the high school from which they were graduated furnish proof of graduation and transcript of credits earned.

Charges: $75 course fee ($25/credit hour); courses are normally evaluated at three semester credits each.

83 **WAUKESHA COUNTY TECHNICAL INSTITUTE.** Industrial Occupations Division. 800 Main Street, Pewaukee WI 53072. (414) 691-3200. Contact: Bruno Wilke, Safety Coordinator.

Offers A.A.S. in Industrial Safety for completion of 67 semester credits in two academic years. The school practices open admissions for high school graduates or anyone who can demonstrate a need to participate in its programs. Courses include Communication Skills, Psychology of Human Relations, Manufacturing Processes, Safety Principles, Principles of Supervision, Accident Prevention Procedures, Occupational Health and First Aid, Chemical Safety, Blueprint Reading and Sketch-

ing, Occupational Safety Engineering, Construction Safety, Human Factors in Accident Prevention, Electrical Safety, Traffic and Fleet Safety, Fire Prevention and Control, Safety Education, and Safety Management.

Tuition: district residents, $9.00/credit; non-residents, $18.50/credit.

84 **WESTERN KENTUCKY UNIVERSITY.** Department of Health and Safety. Bowling Green KY 42101. (502) 745-4797. Contact: J. David Dunn, Head, or Donald G. Carter, Program Coordinator, Department of Health and Safety.

Offers A.S. in Occupational Safety and Health for completion of 67 semester hours. The student may count the A.S. hours as a minor in subsequent work toward a B.S. in majors such as Business Administration, Personnel Management, or some related area. High school diploma is required for admission, and core courses include: Occupational Safety and Health; Safety and Health Standards, Codes, and Regulations; Physical Hazards Recognition and Control; Industrial Hygiene; Safety Program Management; Industrial Fire Protection; Human Factors in Safety; Industrial Psychology; and a six-credit, supervised work experience in industry arranged individually between the University and the cooperating company.

Tuition: residents, $21/credit hour up to $250/semester; non-residents, $53/credit up to $635/semester. Summer tuition: residents, $21/credit up to $125/term (6 hours); non-residents, $53/credit up to $318/term (6 hours).

Baccalaureate and Advanced Degree Programs

85 **CENTRAL MISSOURI STATE UNIVERSITY.** Department of Industrial Safety and Hygiene, School of Public Services. Warrensburg, MO 64093. (816) 429-4743. Contact: Dr. Robert L. Marshall, Dean, School of Public Services and Director of the Missouri Safety Center, or Robert Semonisck, Department Head.

Offers B.S. major (40 hours) and functional major (61 hours) in Public Services: Industrial Safety with a total degree requirement of 124 semester hours. Admission requirements include high school transcript, a physical, and ACT or Missouri School and College Ability Test scores. Required courses include: First Aid, Fire Prevention, Industrial Hygiene, Safety Engineering, Safety and Health Lab, Total Loss Control, OSH Legislation, Worker's Compensation, Accident Prevention, Industrial Security, Legal Aspects, Philosophy, Psychology, Civil Defense, and Construction Safety. Electives include: Traffic Administration and Control, Industrial Electricity, Contruction Materials, Power Technology, Physics, Management, Human Relations,

Chemistry, Statistics for Behavior Sciences, Risk Management, Property-Liability Insurance, and Personnel Administration.

Central Missouri also offers an M.S. in Public Services: Industrial Safety which requires a minimum of 15 hours undergraduate safety studies and a total of 32 semester hours beyond the B.S. The program includes 17 hours of required industrial safety courses (Total Loss Control, Hygiene, Research, Engineering, Administration, Human Factors), 10-12 hours of general safety, (Ventilation, Health Safety Lab, OSH Legislation, Security, Fire Science, Legal Aspects of Safety, Field Experiences, Transportation, Hazardous Material, Worker's Compensation), and 3-5 hours of related natural or social sciences.

The school also offers a Specialist degree in Public Services for at least 30 hours over Master's requirements or 62 total graduate credits in Industrial Safety or Hygiene. The program requires 40 major course credits, 15 hours from supporting fields, and either courses in Research Methods and Selected Investigation in Public Services, or an extended research paper.

Charges: full-time (6 or more credits/semester) residents, graduate or undergraduate, $130/semester; full-time non-resident undergraduates, $330/semester; full-time non-resident graduate students, $330/semester; all part-time students, $20/credit hour. Non-residents pay an additional fee of $200 per term.

86 **COGSWELL COLLEGE**. Safety and Fire Protection Department. 600 Stockton Street, San Francisco CA 94108. (415) 433-1994. Contact: Gene Brem or the Director of Admissions.

Cogswell offers a B.S. in Safety Engineering Technology for completion of 194 credits. Courses include Industrial Safety, Physical Hazard Control, Industrial Hygiene, Drafting, Physics, Calculus, Industrial Chemistry, Strength of Materials, Computer Programming, Statics, Thermodynamics, Fire Technology, Fluid Mechanics, Industrial Electricity, Industrial Psychology, Risk Management, Economics, Accounting, Statistics, Building Design, Industrial Organization, and Business Law. A special assistance program offers help to those with science deficiencies. Cogswell also offers an Associate degree program in Safety Engineering Technology which is described elsewhere in this section.

Tuition: full-time, $650/quarter (12-21 credits); part-time, $58/credit.

87 **COLORADO STATE UNIVERSITY**. Department of Industrial Sciences, College of Professional Studies. Ft. Collins CO 80523. (303) 491-6230. Contact: Dr. B. D. Hayes, Department Head, or Dan Petersen.

Offers an undergraduate major in Manufacturing with a Safety Management concentration and an M.S. in Safety, both in the Department of Industrial Sciences. The B.S. requires completion of 128 semester hours, including 94 hours in the Manufacturing core and 34 semester hours in the Safety concentration. The M.S. requires completion of 30 semester hours plus a Master's Report or Thesis. Ten semester hours may be in an allied field and 20 in Safety Management courses.

Charges: full-time residents, $377.50/semester; full-time non-residents, $1,225.50/semester. Part-time residents (less than 9 hours/semester), $28-$247/semester (1-8 credits); part-time non-residents, $85-$703/semester.

88 **DETROIT INSTITUTE OF TECHNOLOGY**. School of Technology and Applied Sciences, Occupational Safety and Health Program. 2727 Second Avenue at Cass Park, Detroit MI 48201. (313) 962-0830 ext. 328. Contact: Gerald E. Johnson, Coordinator and Lecturer, Occupational Safety and Health Program.

Offers B.S. in Safety Management and Safety Engineering for completion of 129 credits to high school graduates or candidates who have successfully completed the GED examination. Courses include Industrial Safety, Construction Safety, Safety Management, Industrial Hygiene, Accident Investigation, Safety Investigation Research, Fire Protection and Prevention, Laws and Regulations, Principles and Techniques of Machine Guarding, and Survey of Safety and Health. The Department of Community Service also offers short, non-credit courses, workshops, and seminars in Safety and Health for safety professionals, industrial supervisors, and union personnel. The Detroit Institute also offers Certificate and A.S. degree programs in Safety and OSH which are described elsewhere in this section.

Tuition: residents, $64/credit hour (normal load 12-16 hours); non-residents, $859/semester.

89 **EASTERN WASHINGTON UNIVERSITY**. Washington Safety Center. Martin Hall 311, Cheney WA 99004. (509) 359-2207. Contact: Dr. Wayne H. Hall.

Offers B.S. in Occupational Safety and Health for completion of 180 quarter credits. The program is interdisciplinary and is designed to provide the knowledge that will allow an individual to perform the functions of a safety professional. The program includes courses in Industrial First Aid, Chemical Principles Related to Safety, Occupational Safety, Scope and Function of the Safety Professional, Electrical/Electronics Safety, Fundamentals of Industrial Hygiene, Safety Education, Industrial Safety Engineering, Legal Aspects of Safety, Product Safety, Practicum in Safety, Physics, Engineering Drawing, Statistics, Insurance and Risk Management, Technical Report Writing, Communications in Safety, and Developing Attitudes Toward Safety.

Tuition: full-time (10 credits or more) residents, $206/quarter; full-time non-residents, $661/quarter. Part-time (less than 10 credits), $21/credit hour.

90 **GEORGIA INSTITUTE OF TECHNOLOGY**, School of Industrial and System Engineering, Atlanta GA 30332. (404) 894-2318. Contact: Dr. Thomas L. Sadosky, Assistant Professor.

Offers an M.S. degree in Ergonomics. Candidates must be graduates of an accredited college with a major in engineering, mathematics, or science. Courses include Man-Machine Systems, Human Factors Engineering, Work Physiology, Manual Control, and an Ergonomics Seminar.

Tuition: residents, $231.50/quarter or $694.50/year; non-residents, $620.50/quarter or $1,861.50/year.

91 **HARVARD UNIVERSITY**, Occupational Health Program, Department of Physiology, School of Public Health, 665 Huntington Avenue, Boston MA 02115. (617) 732-1167. ERC Director: John M. Peters, M.D. Contact: Thomas J. Smith, Ph.D.

Program in Safety offers S.M. in Environmental Health Sciences, with Industrial Hygiene as the specified field. The Doctor of Science (S.D.) is available to students who wish to continue beyond the S.M. program. Admission is determined by the Committee on Admissions and Degrees, but requirements generally include Graduate Record Examination scores and a baccalaureate degree in engineering or the physical and biological sciences. Programs require either one year (40 credits) or two academic years (80 credits). Courses offered for the safety program include Human Physiology, Epidemiology, Biostatistics, Aerosol Technology, Environmental Control (Ventilation), Environmental Control (Noise), Radiation Protection, Current Topics in Occupational Health, Basic Problems in Occupational Health and Industrial Environments, Identification and Measurement of Air Contaminants, Human Factors in Occupational Performance and Safety, Policy Issues in Occupational Health, Air and Gas Cleaning, Toxicology, Community Air Pollution, Environmental Health Management, and Meteorological Aspects of Air Pollution.

Tuition: full-time, $4,600/academic year; half-time, $2,400. Costs include a health service fee for resident students enrolled for six or more credits.

92 **ILLINOIS STATE UNIVERSITY**, Occupational Safety Studies, Department of Industrial Technology, Normal IL 61761. (309) 438-8467 or 438-3661. Contact: Dr. Edmund T. Dorner, Director, Occupational Safety Studies.

Offers Bachelor of Science in Safety and a Master of Science in Industrial Technology with an option in Occupational Safety. The B.S. program is open to candidates in the upper half of their high school graduating class or with an equivalent score on the ACT. Courses include Industrial Materials and Processes, Principles of Accident Prevention, Occupational Health for the Safety Profession, Industrial Accident Prevention, Accident Investigation Records and Evaluation, Agricultural Accident Prevention, Problems and Research in Accident Prevention, Disaster Preparedness, OSHA, Business Organization and Management, Alcohol and the Accident Phenomenon, Property and Liability Insurance, Risk Management, Industrial Operations, Occupational and Job Analysis, Business and Industrial Psychology, First Aid, Fluid Power Mechanics, and Applied Physical Metallurgy.

Tuition: full-time residents (12 semester hours or more), $353/semester; full-time non-residents, $853/semester. Part-time residents, $21/semester hour; part-time nonresidents, $63/semester hour.

93 **INDIANA UNIVERSITY OF PENNSYLVANIA**. Safety Sciences Department. Indiana PA 15705. (412) 357-3017. Contact: Dr. Robert J. Lauda, Chairperson, Department of Safety Sciences.

Offers B.S. in Safety Management to train specialists in hazard control management, occupational safety and health, fire protection, and product safety. A total of 124 semester hours are required for the degree, including 36 in required specialized courses and 18 in business management. Safety and Health courses include Occupational Safety and Health, Industrial Safety Engineering, Industrial Hygiene, Fire Protection, Systems Safety Analysis, Measurement of Safety Program Effectiveness, Product Safety, Nature and Effects of Occupational Health Hazards, Control of Occupational Health Hazards, and a six-hour internship. Safety Management electives include Fleet Safety, Institutional Safety Management, Product Safety, Radiological Health, Special Topics, and Ergonomics. Business courses include Business Organization and Management and Personnel Management; other courses include Chemistry for Health Professions, Psychology, Probability and Statistics, Physics, Human Anatomy, and Economics.

The department also offers an option in Mine Safety Management, which trains students for positions in the mining industry. New courses have been developed in conjunction with this option, including Introduction to Mine Safety Management, Mine Safety Engineering, and Mine Ventilation.

Tuition: full-time residents, $450/semester; full-time non-residents, $850/semester. Part-time residents, $37/semester hour; part-time non-residents, $68/semester hour.

94 **LOUISIANA STATE UNIVERSITY**. Department of Industrial and Technical Education. Baton Rouge LA 70803. (504) 388-2173. Contact: Dr.

James G. McMurry, Head, Department of Industrial and Technical Education.

Offers a B.S. degree in Industrial Technology with an option in Occupational Safety and Health to students who are graduates of accredited high schools or who hold a GED equivalent. Students receive a broad background in technical and professional courses designed to prepare the graduate to assume supervisory and managerial roles in industry. The Occupational Safety and Health option specifically prepares graduates in the area of safety. Core courses include: Occupational Safety; Occupational Analysis; Industrial Supervisory Practices; Industrial Maintenance Practices; Industrial Safety Management; Occupational Safety and Health Standards, Codes, and Regulations; Nuclear Science; Radiation Control; Anatomy; and First Aid.

Tuition and fees: full-time residents, $225/semester; full-time non-residents, $640/semester.

95 **MADONNA COLLEGE.** Occupational Safety and Health/Fire Science Program, Division of Natural Sciences and Mathematics. 36600 Schoolcraft Road, Livonia MI 48150. (313) 591-1200. Contact: Dr. Edward D. Meyer, Chairman, Division of Natural Sciences and Mathematics.

Offers a B.S. program in Fire Protection and Occupational Safety that requires four years and a total of 120 semester hours, including 52 hours in major and related courses and 68 hours in general electives. Admission requires a high school transcript or General Education Development (GED) results and Scholastic Aptitude or American College Test scores, if available. Courses include: Occupational Safety and Health; Principles of Building Construction and Building Codes; Hazardous Materials; Investigations; Accident Statistics and Corporate Management; Safety Programs and Program Management; Safety and Health Standards, Codes, and Regulations; Industrial Hygiene; Physical Hazards and Controls; and Industrial Fire Prevention and Protection. Up to nine credits may be awarded for an applicant's acquired knowledge, training, and field experience in safety and/or fire fighting. Madonna College also offers certificate and Associate degree programs in Fire Protection and Occupational Safety, which is described elsewhere in this section.

Charges: $42/semester hour.

96 **MEMPHIS STATE UNIVERSITY.** Division of Engineering Technology, Herff College of Engineering. Memphis TN 38152. (901) 454-2225. Contact: Dr. George G. Hitt, Chairman of Industrial Safety.

The Division of Engineering Technology offers a Manufacturing Technology major with an option in Industrial Safety leading to a B.S. in Engineering Technology. Entrance requirements include high school graduation or GED equivalent and

scores on the American College Test. All majors must complete the Engineering Technology core of 70 semester hours, plus 66 hours within their major, for a total of 136 semester hours. The safety curriculum consists of Construction Safety, Industrial Safety, Electrical Safety, Materials Handling Safety, Human Performance Factors, Fire Safety, Chemical Safety, Industrial Hygiene, Human Anatomy and Physiology, and Industrial and Organizational Psychology.

Charges: maintenance fee of $20/semester hour up to a maximum of $224 for all students. Additional tuition charge for non-residents: $468/semester full-time or $39/semester hour. Tennessee residents attend tuition-free.

97 **MIDDLE TENNESSEE STATE UNIVERSITY.** Department of Health, Physical Education, Recreation and Safety. Murfreesboro TN 37132. (615) 898-2113. Contact: Dr. Jim Wiseman, Associate Professor, Safety Studies, Box 528.

Offers M.A. and M.Ed. in Safety Management in a cooperative program between Department of Health, Physical Education, Recreation and Safety and Department of Industrial Arts and Technology. Program requires 32 credits and includes courses such as Accident Control, Safety Psychology, Automotive Transportation Safety Programs, Industrial Safety, Occupational Safety and Health Seminar, Safety Planning, Environmental Safety, Anthropometric Factors in Accident Prevention, Contemporary Safety Beliefs and Foundations, Physiology of Activity, Fire Prevention, Consumer Product Safety, Legal Aspects of Safety Legislation, Industrial Hygiene, and Management of Industrial Hygiene. Entrance requirements include 18 undergraduate semester hours or equivalent in safety or related field and test scores from the Miller Analogies Test and Purdue English Examination.

Tuition: full-time (12 semester hours or more) residents, $241/semester; part-time (11 semester hours or less) $22/semester hour. Full-time non-residents, $709/semester; part-time non-residents, $61/semester hour.

98 **MILLERSVILLE STATE COLLEGE.** Division of Education. Myers Hall, Millersville PA 17551. (717) 872-5411. Contact: Dr. Raymond C. Mullin, Director of Safety Education.

Plans to offer a baccalaureate degree in Occupational Safety and Health. The program will be in addition to the Education For Safe Living (Driver Education) certification program presently offered. Courses currently offered include: Occupational Safety and Health; Personal Safety and First Aid; Recognition of Accident Potential in the Work Environment; Industrial Hygiene; Organization and Administration of Industrial Safety and Health Programs; Personnel Management in Occupational Safety and Health; Fire Prevention, Protection, and Control in the Industrial Set-

ting; Industrial Psychology in Safety and Accident Prevention; and Federal and State Occupational Safety and Health Legislation. The program includes a one-semester internship on industrial sites.

Tuition: full-time (12 or more credits), $450/semester; part-time undergraduate, $39/credit; part-time graduate, $51/credit.

99 **MILWAUKEE SCHOOL OF ENGINEERING.** College of Engineering, Engineering Technology, and Management, Division of Continuing Education. 1025 N. Milwaukee Street, Milwaukee WI 53201. (414) 272-8720 ext. 305. Contact: Dr. Robert W. Braun, Chairman, Chemistry Department.

Plans to offer a Bachelor of Industrial Safety program in 1979 to Associate Degree holders or others who present appropriate prerequisites, including Algebra, Psychology, Engineering Graphics, Computer Programming, Chemistry for Technologists, Technical Composition, and Physics for Technologists. The program would require 126 semester credits for completion, including 30 credits in the major, 20 2/3 credits in Mathematics, Technology and Management, and 15 1/3 credits in general studies and electives. Required and elective courses would include Industrial Safety, Industrial Accident Prevention, Environmental Pollution, Psychology of Work, Industrial Hygiene, Industrial Materials, Economics, Industrial Statistics, Plant Layout and Materials Handling, Chemistry of Hazardous Materials, Industrial Psychology, Industrial Fire Prevention and Industrial Security, OSHA and Safety Standards, OSHA Construction Safety and Health, Safety Management, Systems Safety, Ergonomics, Managerial Accounting, Supervision, Industrial Relations, Industry and Government Relations, Personnel Administration, Ethics for Engineers and Managers, Professional Guidance, and an Industrial Safety Project.

Tuition: $65/semester hour.

100 **NEW YORK UNIVERSITY.** Center for Safety, School of Education, Health, Nursing, and Arts Professions. Washington, Square, New York NY 10003. ERC Director: Irving J. Selikoff, M.D. (212) 650-6174. Contact: L. Slote, Eng. Sc.D., Program Director, Occupational Safety, (212) 598-2156, or E. R. Tichauer, Sc.D., Program Director, Ergonomics/Biomechanics, (212) 598-2156.

As part of the Mount Sinai School of Medicine Educational Resource Center, New York University offers a Master's and Ph.D. program in Occupational Health and Safety to produce a professional corps of safety practitioners with technical competence and advanced conceptions of hazard control. The Master's degree program

requires completion of 43 points and is open to applicants with a baccalaureate degree and a grade point average to meet university admission requirements. Courses include Safety for Modern Society, Environmental Factors in Safety, Human Performance Variables in Safety, Occupational Safety Program—Organization and Administration, Statistical and Epidemiological Approaches to Hazard Analysis, Occupational Health Seminar, Practicum in Occupational Hazards, Environmental Hygiene, Industrial Hygiene Laboratory, Safety and the Law, Psychology in Hazard Control Education, Field Experiences for the Safety Specialist, Biomechanics, and Biomechanical Design of Work Places and Equipment. The selection of courses and total number of points required for Ph.D. students are arranged by agreement between the doctoral advisor and the matriculant. A minimum of 30 points in residence and a coursework average of 3.0 are required for the Ph.D. Courses for doctoral students include Dissertation Proposal Seminar in Safety Education, Departmental Seminar in Safety Progress, and Departmental Seminar in Biomechanics.

NYU also offers a Diploma in Ergonomics/Biomechanics to applicants with Bachelor's or advanced degree or equivalent professional experience for completion of 21 credits. A Master's degree is offered to applicants with a bachelor's degree and satisfactory GPA for completion of 34 credits in Ergonomics/Biomechanics. The Ph.D. is offered in chosen areas of specialization. The Diploma program is a practitioner-oriented, continuing education effort designed to provide professionals in the occupational health, hygiene, and safety fields, in industrial and product design, and in related engineering disciplines with practical skills and knowledge essential to the development and management of ergonomics- and biomechanics-related programs in industry. Instruction is provided in the analysis, design, and improvement of integrated man/equipment/task systems. The program consists of seven intensive courses: Biomechanics, Quantitative Methods in Ergonomics and Biomechanics, Select Aspects of Anatomy and Physiology of Work, Human Factors in Technology, Environmental Hygiene, Productivity Aspects of Ergonomics and Biomechanics, and Selected Topics. The Diploma program is open to applicants with Bachelor's or advanced degree or equivalent professional experience. The Master's degree program trains individuals with backgrounds in the health professions, engineering, or related disciplines for careers in academic research, teaching, and industrial practice. Instruction explores the interaction between man at work and his physical environment, particularly the avoidance of anatomical failure points in man-task systems. Skills are developed in the use of instrumentation and measurement techniques employed in the ergonomic and biomechanical evaluation of work stress and work strain; in addition, students are exposed to experimentation with human subjects. Courses available include Biomechanics, Physical Biomechanics, Biomechanical Design of Work Places and Equipment, Foundations of Safety for Modern Society, Environmental Factors in Safety, Human Performance Variables in Safety, and Psychology in Hazard Control Education.

Tuition: $120/credit hour.

101 **NORTH CAROLINA STATE UNIVERSITY.** Industrial Engineering Department. Box 5511, Raleigh NC 27650. (919) 737-2362. ERC Director: David A. Fraser, Sc.D. Contact: Richard G. Pearson, Ph.D.

As part of the Educational Resource Center administered by the University of North Carolina at Chapel Hill, North Carolina State University's program in Safety and Ergonomics is jointly sponsored by the Industrial Engineering and Psychology Departments to provide flexibility and breadth to the interface problems of man-machine systems and environment. An M.S. and Ph.D. in Industrial Engineering and a Ph.D. in Psychology are offered, with core courses given in Human Factors in Systems Design, Systems Safety Engineering, Physiological Criteria in Work Measurement, Occupational Biomechanics, Environmental Factors and Human Performance, and Accident-Injury Control. These courses expose students to such topics as human performance characterictics, environmental stress, design for safety and injury control, biomechanics, industrial hygiene and toxicology, accident investigation, and epidemiological and statistical approaches. All students are required to take a minor in environmental health. A thesis or project is required for the M.S. degree. Master's level trainees are expected to complete all degree requirements in one year; doctoral level trainees have two years. Applicants should have an undergraduate degree in engineering or in behavioral, biological, or physical sciences. Preparation in math through calculus and statistics also is required. Experimental psychology and/or physiology are desirable.

Tuition and fees: residents, $279.15/semester; non-residents, $1,135.15/semester.

102 **NORTHERN ILLINOIS UNIVERSITY.** Department of Industry and Technology, College of Professional Studies. Room 200, Still Gym, DeKalb IL 60115. Contact: James R. Rogers, Associate Professor of Industrial Safety, (815) 753-0579.

Offers B.S. with major in Industrial Safety and M.S. with majors in Industrial Safety and Traffic Safety Education. B.S. requires 64 semester credits and M.S. requires 32, with a choice of a thesis or technical research paper and approximately six field trips to industrial facilities. Courses include Industrial Accident Prevention, Organization and Administration of Industrial Loss Control, Industrial Hygiene, Behavioral Factors in Accident Prevention, Safety in Transportation Systems, Conference Leading for Industry, Principles of Accident Prevention, Traffic Safety Programs, Traffic Safety Education Theory, Individual Problems in Safety, Disaster Preparedness, Man's Safety in the Modern World, Systems Safety Analysis, Research in Safety, First Aid, and Audiology.

Tuition: residents, $390/semester for 12 or more credits; part-time (6-12 credits) residents, $21/semester hour and $140 fees. Full-time non-residents, $890/semester; part-time non-residents, $63/semester hour and $140 fees.

103 **OKLAHOMA STATE UNIVERSITY.** School of Engineering Technology. Stillwater OK 74074. (405) 624-5721. Contact: Dale F. Janes, Head of Fire Protection and Safety Engineering Technology.

Offers an E.C.P.D.-accredited B.S. program in Fire Protection and Safety Engineering Technology as a "two plus two" program to graduates of accredited high schools with averages of 3.0 or higher, rank in upper half of their graduating classes, or a score on the ACT placing the candidate in the upper half of high school seniors. The first two years of the program stress Fire Protection and Safety and lead to an Associate degree. Students continue through junior and senior courses, which emphasize Occupational Safety and Health, and receive the B.S. for completion of 129 semester credits. Coursework stresses recognition, evaluation, and control of existing and potential threats to life, property, or proprietary information. Courses include Fire/Safety Hazards Recognition, Fire Detection and Suppression Systems, Industrial Loss Prevention, Structural Designs for Fire/Life Safety, Electrical Safety Codes, Industrial Safety Organization, Traffic and Fleet Safety, Occupational Safety Techniques, Industrial Security Applications, Elements of Industrial Hygiene, Basic Instrumentation, System Safety Management, and Radiological Safety.

Lower division tuition: residents, $15.25/credit hour; non-residents, $44.00/credit. Upper division tuition: residents, $17.50/credit hour; non-residents, $50.75/credit.

104 **SOUTHERN ILLINOIS UNIVERSITY.** Safety Center. Carbondale IL 62901. (618) 453-2080. Contact: Dr. James E. Aaron, Coordinator.

Offers Master's program in Industrial Safety and Health with option in Industrial Safety for completion of 40 hours of class and practical work. Core and required courses include Human Ecology, Epidemiological Approaches to Disease Prevention and Control, Advanced First Aid and Emergency Care, and Environmental Dimensions of Health Education. Suggested elective courses include Current Literature in Health-Related Fields, Industrial Chemistry, Human Engineering, Air Pollution Control, Vital Statistics, a Special Project culminating in a research paper, participation in a Health Education Summer Conference, and a field experience in School, Community Health, or Safety Education. The required Practicum in Industrial Safety and Health involves full-time student assignment to an industry for experience in industrial safety and health.

Tuition: full-time residents, $369; full-time non-residents, $893.

105 **TEXAS A&M UNIVERSITY.** Department of Nuclear Engineering and Department of Engineering Technology. College Station TX 77843. ERC Director: Marcus M. Key, M.D. Contact: Richard D. Neff, Professor

of Nuclear Engineering and Radiological Safety Officer, (713) 845-4161, or Daryle W. Morgan, Ed.D., Professor of Engineering Technology, (713) 845-4951.

As part of the program of the University of Texas Educational Resource Center, Texas A&M offers a B.S. in Radiation Protection Engineering. The degree program requires 140 semester credits and includes mathematics through Differential Equations, Engineering Analysis, Nuclear Engineering, Thermodynamics, Nuclear Reactor Theory, Radiation Safety, Fluid Mechanics, Industrial Hygiene Engineering, Environmental Nuclear Engineering, Principles of Radiation Protection, Design of Nuclear Reactors, and Radiation Protection Engineering.

Texas A&M also offers an M.S. in Radiation Health Physics. The degree program requires 32 semester credits and includes courses in Radiological Safety, Nuclear Measurement Statistics, Radiation Biology, Radiation Safety Principles, Radiological Safety Safety and Hazards Evaluation, Nuclear and Radiochemistry, Nuclear Radiation Detection, and Mammalian Radiation Biology.

Texas A&M also offers a B.S. in Engineering Technology-Safety. This degree program requires 134 semester credits and includes mathematics through Integral Calculus, College Physics, Engineering Mechanics, Technical Writing, and 20 semester credits in Safety Engineering, Industrial Hygiene Engineering, and Fire Protection Engineering. Courses include Principles of Safety Engineering, Industrial Hygiene Engineering, System Safety Analysis, Industrial Safety Engineering and Fire Protection Engineering. The senior year includes an additional five semester credits in one of the specialty areas.

Charges: residents, $4/credit hour (minimum $50) plus $144/semester in fees; non-residents, $40/credit hour plus $144/semester in fees.

106 UNIVERSITY OF ARIZO[illegible]izona Center for Occupational Safety and Health (ACOSH), Depa[illegible] of Finance, College of Business and Public Administration. Tucson AZ 85721. (602) 626-1649. ERC Director: Herbert K. Abrams, M.D., M.P.H. Contact: Nestor Roos, D.B.A., Director, Safety Management Program.

Offers M.S. in Finance (Safety Management) to train managers of OSH programs, to define risks and their costs so that they may be kept within acceptable limits, and to provide an understanding of behavioral concepts as they apply to safety and risk management. Applicants must have baccalaureate degrees and experience if possible in safety-related fields and must submit scores from the GMAT or the GRE. The degree requires 45 credits, including a research report, and usually takes two semesters and two 5-week summer sessions for completion. Courses include Occupational Safety and Health, Safety Law, Safety Management, Statistical Decision-making, Risk Management, Organization Theory and Behavioral Relations,

Research Techniques in Safety, Economics, Marketing Management, Management Information Systems, Business Financing Accounting, Toxicology, Human Engineering, and Industrial Hygiene.

Tuition: full-time Arizona residents, $225/semester or $32/unit; non-residents, $1,050/semester or $45/credit unit. Stipends up to $3,900 are available.

107 **UNIVERSITY OF CINCINNATI.** Division of Environmental Hygiene and Safety, Department of Environmental Health, College of Medicine. 3223 Eden Avenue, Cincinnati OH 45267. (513) 872-5732. ERC Director: Raymond R. Suskind, M.D. Contact: Graduate Studies Office, Mrs. Jean Meyer (513) 872-5716; Dr. Dale Johnson (513) 872-5759; or Mr. Howard E. Ayer, Safety Program Director.

Offers graduate programs in Occupational Safety. Admission requirements include a B.S. in engineering, physical science, or biology, a superior academic record, and GRE scores or a successful record of graduate studies. Work for M.S. degree requires one year (45 credits and a thesis). Core courses include Environmental Health and Safety Seminar, Environmental Hygiene and Safety Technology, Safety Management, Safety Engineering and Product Liability, Biostatistics, Ergonomics, Workmen's Compensation, and Industrial Hygiene and Safety Laboratory. A short course, Manual Materials Handling, also is available; it last 3 days and costs $150.00. For information contact the Division at (513) 872-5732.

Tuition: residents, $1,960/year; non-residents, $3,900/year. Stipends of $3,900/year and tution remissions are available.

108 **UNIVERSITY OF DUBUQUE.** Department of Safety, College of Liberal Arts. Dubuque IA 52001. (319) 557-2220. Contact: Fred Wagner, Director, Department of Safety.

Offers B.A. and B.S. in Industrial Safety to guide each student in the development of a philosophy of human conservation that will enable the student to live in harmony with the man-machine environment of industry; to make students aware of hazards present in the workplace and techniques for lessening the dangers; and to prepare students for safety positions in industry, insurance, education, labor organizations, or government. ACT or SAT scores are required of undergraduate applicants. The Industrial Safety major constitutes 89 of the 124 credits needed for graduation. Twenty-eight of the 89 hours are from a departmental core in Administration and Business consisting of: Introduction to Business, Economics, Accounting, Statistics, Computer Applications, Management and Organization, Business English, and Speech Fundamentals. Introductory Safety field work earns two credits at the sophomore level. A senior internship earns six credits, and the following courses comprise the total major: Psychology of Accident Prevention, Principles

and Practices of Safety Education, Human Conservation Legislation, Introduction to OSHA, Introduction to Consumer Product Safety Act, First Aid, Human Factors Engineering, Industrial Safety Management, Industrial Safety Methods, Industrial Security, Industrial Hygiene, Seminar in Safety, Risk and Insurance, Human Relations Skills, Human Physiology, Personnel Management, Chemistry, Psychology of Communication, Psychology of Adjustment, and Psychology of Personality.

Tuition: Full-time (12-17 credits), $2,500/semester; part-time, $85/credit during spring and fall semesters; $55/credit during summer.

109 **UNIVERSITY OF ILLINOIS AT THE MEDICAL CENTER.** School of Public Health. Post Office Box 6998, Chicago IL 60680. (312) 996-2591. ERC Director: Bertram W. Carnow, M.D. Contact: George W. Harper, Professor of Occupational and Environmental Medicine.

Offers M.P.H., M.S., Dr.P.H., and Ph.D. in Occupational Safety to holders of baccalaureate degrees in engineering and the physical and biological sciences. The program prepares safety professionals and researchers capable of serving in industry, government, or academia. The Master and Doctor of Public Health degrees are professional school offerings and may be completed in one and three years, respectively. The Master of Science and Doctor of Philosophy degrees are oriented toward scientific research and specialization. The M.S. degree requires 50 quarter hours of course credits and 22 credits of research and thesis; it may be completed in 18 months. The Ph.D. degree must be completed within 7 years of first enrollment in a flexible and individually designed program. Courses in a typical M.S. program in Occupational Safety include Epidemiology, Biometrics in Public Health, Occupational Health and Environmental Medicine, Industrial Hygiene, Industrial Safety, Bioengineering, Man-Machine Systems, Human Physiology, Human-Industrial Relations, Management Information Systems, and Management and Organizational Development.

Tuition: residents, $332/quarter; non-residents, $742/quarter.

110 **UNIVERSITY OF MINNESOTA, DULUTH.** Department of Industrial and Technical Studies. Duluth MN 55812. (218) 726-8250. ERC Director: Conrad P. Straub, Ph.D. Contact: Robert V. Krejcie, Ed.D., Program Director, Master of Industrial Safety Program.

As part of the University of Minnesota ERC, the Duluth campus offers an M.I.S. in Occupational Safety upon the completion of 45 credits of graduate work. Applicants should have a baccalaureate degree in engineering, (industrial or technical) or other appropriate fields which would enable them to relate to the technical nature of industrial operations, and they should have work experience in a business, trade, or industry. Courses include: OSHA Voluntary Compliance; Safety;

Health Standards, Codes, and Regulations; Legal Implications in Safety; Organization and Administration of Safety Programs; Situational Analysis; Statistical Techniques; Industrial First Aid; Industrial Toxicology; Emergency Planning; Preparedness; Physical Hazard Control; Industrial Ventilation; Construction Safety; Traffic and Fleet Safety; Industrial Hygiene; Ergonomics; Hearing Conservation; Fire Prevention and Control; Internship in Industrial Safety; Problems in Industrial Safety; Conference-Leading Techniques; and Industrial and Business Psychology.

Tuition: full-time residents, $297/quarter; full-time non-residents, $847/quarter.

111 **UNIVERSITY OF SOUTHERN CALIFORNIA.** Institute of Safety and Systems Management. University Park, Los Angeles CA 90007. (213) 741-6045. ERC Director: B. Dwight Culver, M.D. Contact: John V. Grimaldi, Ph. D., Institute Associate Director, or Ted S. Ferry, Chairman, Safety Department.

As part of the ERC program administered by the University of California at Irvine, USC offers B.S. and M.S. degrees in Safety, both programs incorporating a significant amount of occupational health information and industrial hygiene elements. Undergraduate admission is based on high school graduation and transcripts or by transfer from a community college. Graduate admission requires a bachelor's degree from an accredited college or university, an acceptable GPA over the final 60 units of undergraduate work, satisfactory scores on verbal and quantitative aptitude portions of the GRE, and a non-refundable application fee of $25. The B.S. in Safety requires 128 semester units (48 required in Safety). M.S. in Safety requires 30 graduate units plus a comprehensive examination. Core courses for the B.S. include Safety and Health, Human Factors in Accident Prevention, Safety Technology, Safety Education and Training, Industrial Hygiene, Safety Program Administration, Advanced Safety Technology, and Applications of Industrial Hygiene. M.S. courses include Philosophical Basis for Accident Prevention, Investigation of Accidents, Human Factors in Accident Causation, Statistical Methods of Safety, Experimental Design, and Safety Research. Four new M.S. degrees in Industrial Hygiene, Occupational Safety and Health, Ergonomics/Biomechanics, and Safety Engineering (with the School of Engineering) have been planned for offering in the near future.

Tuition: $2,100/semester for 15-18 units, or $140/credit hour. Contact Dr. Grimaldi regarding stipend and traineeship information.

112 **UNIVERSITY OF WISCONSIN-PLATTEVILLE.** Occupational Safety Program, Department of Industrial Studies, College of Business, Industry, and Communication. Platteville WI 53818. (608) 342-1246. Contact: Dr. Alva Jared, Chairman, Department of Industrial Studies, or Professor R. E. Hauser, Advisor, Occupational Safety Program.

Offers B.S. in Occupational Safety for completion of 128 semester hours, including 43 in general University requirements, 44 in the Safety major, 23 in a related minor, and 18 in unrestricted electives. Courses include Introduction to Industry, Safety, Alcohol and Other Drugs as Related to Safety, Behavioral Aspects in Safety, Seminar in Safety, Occupational Safety Management, Research Methods in Safety, Industrial Internship in Safety, Disaster Preparedness, First Aid and Accident Prevention, Analysis of Industrial Safety, and Occupational Safety Laws and Regulations.

Tuition: residents, $398/semester; non-residents, $1,328.50/semester.

113 **UNIVERSITY OF WISCONSIN-STOUT.** Safety Center, School of Industry and Technology. Menomonie, WI 54751. (715) 232-1313/1422. Contact: Dr. Willis L. Valett, Director, Safety Center; Herbert A. Anderson, Dean, School of Industry and Technology; or Dr. Charles Edwin Smith, Program Director.

Offers M.S. in Safety for completion of 30 semester hours, including optional thesis. Admission depends on baccalaureate degree, undergraduate performance, and preparation in an occupational, technical, vocational and/or related area. Previous professional, vocational, or industrial experience is recommended. Courses included are Principles of Occupational Safety, Voluntary OSHA Compliance, Standards and Regulations, Contemporary Problems in Occupational Safety, Fire Prevention/Protection, Human Factors Engineering, Construction Safety, Motor Fleet Safety, Foundations in Safety, Risk Management in Loss Control, Occupational Safety Management, Field Problem in Accident Prevention, Occupational Safety Internship, Seminar in Occupational Safety, Industrial Hygiene, Systems Analysis and Design, Research Foundations, Industrial Supervision, Industrial Management, Labor and Industrial Relations, Personnel Management, Environmental Chemistry, and Sociology of Work.

Tuition: residents, $22.00-$438.00 for 0.5 to 9 or more credits/semester; non-residents, $70.75-$1,314.50 for 0.5 to 9 or more credits/semester.

114 **UNIVERSITY OF WISCONSIN-WHITEWATER.** Department of Safety Education, School of Education, College of Liberal Arts. 800 West Main Street, Whitewater WI 53190. (414) 472-1252. Contact: Mr. Albert Mims, Assistant Professor, Industrial Safety.

Offers B.S. in Education with either a major or minor in Safety Education and a broadfield major in Occupational Safety. The program requires four years and is open to graduates of accredited high schools. Courses include Introduction to Safety, Emergency Care of the Injured, Behavioral Aspects of Accident Prevention, Human Factors Engineering, Legal Aspects of Accident Prevention, Alcohol and

Other Drugs, Industrial Accident Prevention, Industrial Safety Management, Safety in the Construction Industry, Fire Protection/Prevention, Motor Fleet Safety, Product Safety, Chemical Safety, Industrial Hygiene, Environmental Radiation Protection, Safe Handling of Materials, Data Processing, Labor Problems, Organizational Behavior, Psychology, and an 18-week Fieldwork in Safety program in the senior year, which offers the opportunity to practice concepts learned in the academic phase.

Tuition: full-time residents, $395.75/semester; full-time non-residents, $1,326.25/semester.

115 **WEST VIRGINIA UNIVERSITY.** Safety Studies Department. Room 280, Coliseum, Morgantown WV 26506. Contact: Dr. C. Everett Marcum, Chairman, Safety Studies Department.

Offers M.S. and Ed.D. in Occupational Safety Studies to candidates who have completed baccalaureate degrees in fields such as business, education, engineering, or the sciences. The M.S. program requires completion of 36 semester hours with a thesis option available. The Ed.D. program requires 75 semester hours and completion of a dissertation. Core courses include Contemporary Safety Beliefs, Disaster Preparedness Systems, Fire Services Management, Health Hazards Control, Human Factor Countermeasures, Injurious Hazards Abatement, Occupational Legislation Compliance, Property Loss Minimization, Security Management Essentials, Safety Evaluation Practices, Safety Functions Management, and Safety Manpower Development.

Charges: residents, $15/semester hour; non-residents, $70/semester hour. Special Fees of $20-$55 also are assessed.

PROGRAMS IN INDUSTRIAL HYGIENE

Associate Degree and Certificate Programs

116 **HUDSON VALLEY COMMUNITY COLLEGE.** Environmental Health Technology. 80 Vandenburg Avenue, Troy NY 12180. (518) 283-1100. Contact: C. F. Zipprich, P.E., Ph.D., Chairman.

Offers an Associate in Applied Science in Public Health Technology-Environmental Health for completion of 64 credit hours to applicants who have had two or more years of high school mathematics. The program covers a broad range of environmental topics including noise, radiation, air pollution, water resources, and

monitoring. All students complete such core courses as math, chemistry, physics, biology, English, and microbiology. Recent graduates have found employment in positions related to OSH

Charges: residents, $417/semester tuition plus fees for 12 or more semester hours; $31/credit hour tuition for less than 12 credit hours. Non-residents, $792/semester tuition plus fees for 12 or more semester hours; $62/credit hour tuition for less than 12 credit hours.

117 **WESTERN WISCONSIN TECHNICAL INSTITUTE.** Trades and Industrial Division, Industrial Hygiene Technician Program. Sixth and Vine Streets, La Crosse WI 54601. (608) 785-9178. Contact: Mr. William Welch, Sr., Division Chairman; Mr. Richard Markos, Registrar; or Mr. Paul Lynch, Instructor, Industrial Hygiene Technology.

Offers A.A.S. in Industrial Hygiene Technology to qualified holders of a high school diploma or recognized equivalent. The program prepares industrial hygiene technicians with the knowledge to recognize occupational health and safety hazards and equips its graduates with the technical skills to evaluate the degree of the hazard and the ability to apply simple control measures. A vital part of the program is the required industrial hygiene internship, during which the student gains work experience in industry in applying industrial hygiene principles. Required courses include Industrial Hygiene, General Chemistry, Technical Mathematics, Technical Drawing, Oral Communications, Industrial Organic Chemistry, Environmental Sampling, Electricity and Electronics, Written Communications, Technical Physics, Environmental Toxicology, Psychology of Human Relations, Hazardous Materials, Industrial Hygiene Sampling and Measurement, Control of Industrial Environmental Conditions, Industrial Psychology, Industrial Safety, Industrial Hygiene Instrumentation and Control, and Technical Report Writing. The program requires 103 credits for graduation.

Tuition: district residents, $5/credit hour; full-time students (17 credits/quarter), $103/quarter.

Baccalaureate and Advanced Degree Programs

118 **ARIZONA STATE UNIVERSITY.** Speech and Hearing Clinic, Department of Communication, College of Fine Arts. Tempe AZ 85281. (602) 965-2905. Contact: Michael F. Dorman, Ph.D., Coordinator for Communication Disorders, or Gordon L. Cluff, Ph.D., Professor of Audiology.

Offers M.S. in Communication Disorders with emphasis in Industrial Hearing Conservation to candidates who present a B.S. in Speech and Hearing Science, undergraduate GPA of 3.0 or better, GRE scores, and three letters of recommendation. Typical Audiology curriculum can be altered to meet needs of candidates wishing to work in industrial hearing conservation setting. Courses include Methods of Audiometry, Advanced Audiology, Auditory Prosthetics, Pediatric Audiology, Research Procedures, Adult Oral Rehabilitation, Advanced Psychology of Aurally Handicapped Children, and a Practicum involving a minimum of 300 clock hours. Area of Emphasis Curriculum includes Fundamentals of Management, Noise and Society, Managerial Concepts, Programming for Graduate Research, Organizational Behavior, and Externship in Industrial Hearing Conservation. The program requires a minimum of 2 years and 36 semester hours exclusive of credit for Research, Practicum, and Externship.

Tuition: residents, $275/semester for 7 hours and above, $30/semester hour for 6 hours and under; non-residents, $730-$1,050/semester for 7-12 hours, $30/semester hour for 6 hours and under.

119 **BOWLING GREEN STATE UNIVERSITY.** Environmental Health Program, College of Health and Community Services. Bowling Green OH 43403. Contact: Dr. Edward Morgan, (419) 372-0242, or Lynn Walters, (419) 372-0207.

Offers B.S. in Environmental Health to prepare specialists to deal with environmental problems related to public health, pollution control, and occupational health and safety. Specific courses include Microbiology for Water and Food, Environmental Law, Environmental Sanitation, Biological Examination of Water and Wastewater, Water and Wastewater Treatment, Environmental Health and Protection, Institutional Health and Sanitation, Air Pollution Surveillance, Health Care Sanitation and Safety Inspection, Environmental Impact Statements, Economic Biology, Hazard Recognition, Occupational Safety Analysis, and Organization of Public and Environmental Health Services. Students spend one year of their four-year program at a branch campus (Firelands) in Huron, Ohio, to complete some of the technical courses, and they must also take an internship for one quarter. A total of 183 quarter hours are required for the Bachelor's degree.

Tuition: residents, $360/quarter; non-residents, $789/quarter.

120 **CALIFORNIA STATE UNIVERSITY, HAYWARD.** Health Science Program, School of Science. Hayward CA 94542. (415) 881-3000. Contact: Dr. John C. Wong, Director of Health Sciences Program.

Offers B.S. major in Health Sciences with option in Occupational Health. The degree requires 186 units; the major constitutes 134-137 units, comprised of 29-31

units in biological science, 23 units in chemistry, 12 units in physics, 4 in mathematics, 4-5 in statistics, 5 in psychology, 4 in management sciences, 3 in physical education, and 8 units in either anthropology or sociology. Courses include: Research and Program Evaluation in Health Sciences; Environmental Health; Medical Care in the U.S.; Individual and Community Mental Health; Occupational Health; Health Hazards to Workers; Occupational Environmental Controls; Instrumentation, Sampling and Analysis; Industrial Toxicology; and Supervised Field Training and Report Writing.

Tuition: residents, $52 for 6 units or less; $62 for 6.1 or more units. Non-residents, $38/unit up to 15 units; over 15 units, $570 total.

121 **CALIFORNIA STATE UNIVERSITY, NORTHRIDGE.** Department of Health Science, School of Communication and Professional Studies. 18111 Nordhoff Street, Northridge CA 91330. (213) 885-3101. Contact: Dr. Dennis L. Kelly, Director, Environmental and Occuptional Health Program.

Offers B.S. and M.S. in Industrial Hygiene and Community Environmental Health. Baccalaureate program participants complete a basic sciences curriculum that includes precalculus mathematics, physics, biology, physiology, and chemistry. Applicants for the M.S. should have a baccalaureate degree in environmental or occupational health or equivalent. The program requires 12-18 months for completion. Core courses include Research Design, Environmental and Occupational Health Problems, Environmental and Occupational Health Standards, and Administration of Environmental and Occupational Health Programs. Electives include Occupational Health, Industrial Hygiene Measurements, Industrial Toxicology, Radiological Health, Accident Prevention, and Industrial Safety. The B.A. program requires 128 credits, and the M.S. requires 30.

Charges: residents, $100/semester tuition and $100/semester fees. Non-residents, $787/semester for 15 or more units, or $52.50/unit for 1-14 units.

122 **CENTRAL MISSOURI STATE UNIVERSITY.** Department of Industrial Safety and Hygiene, School of Public Services. Warrensburg MO 64093. (816) 429-4743. Contact: Dr. Robert L. Marshall, Dean of School of Public Services and Director of the Missouri Safety Center, or Mr. Herbert H. Jones, Lecturer, Industrial Hygiene, (816) 429-4971.

Offers M.S. in Public Services: Industrial Hygiene for completion of 32 semester hours and either a thesis or at least two research papers. Required courses include: Organization, Administration, and Supervision of Safety Programs; Industrial Hygiene; Current Literature and Research in Public Services; Industrial Environmental Monitoring; Vibration and Noise Measurements; Industrial Toxicology;

Radiation and Optics; Industrial Audiology; Chemical Fundamentals For Industrial Hygienists; Nuclear Radiation and Optics; Nuclear Radiation and X-Rays; and Biology for Industrial Hygienists. Four of the required 32 credits must be chosen from Industrial Safety courses.

Central Missouri also offers a Specialist degree in Public Services for at least 30 hours over Master's requirements or 62 total graduate credits in Industrial Hygiene or Industrial Safety. The program requires 40 graduate credits in Public Services, 15 hours from supporting fields, and either courses in Research Methods and Selected Investigation in Public Services or an extended research paper.

Charges: full-time (six or more credits/semester) residents, graduate or undergraduate, $130/semester; full-time non-resident undergraduates, $330/semester; full-time non-resident graduate students, $330/semester; all part-time students, $20/credit hour. Non-residents pay an additional fee of $200 per term.

123 **CITY UNIVERSITY OF NEW YORK, BARUCH COLLEGE.** Department of Psychology and School of Business Administration. 17 Lexington Ave., New York NY 10010. Contact: for undergraduate programs, Professors Lawrence Zeitlin or Joel Lefkowitz, (212) 725-3074; for graduate programs, Professor Abraham Korman, (212) 725-3068.

Offers B.B.A., B.S., or B.Ed. with specialization in Industrial Psychology to high school graduates from the upper one-third of their class or who had overall averages of 80 on a scale of 100. A total of 128 semester credits are required for graduation, with a minimum of 28 in Psychology. Required courses for the specialty in Industrial Psychology include Psychology of Motivation, Physiological Psychology, Vocational Psychology, Industrial and Organizational Psychology, Psychology and Urban Problems, Environmental Psychology, field trips in Industrial and Organizational Psychology, Experimental Psychology, and Instrumentation in Psychological Research. Field work is optional.

Baruch also offers an M.B.A. in Industrial Psychology to qualified graduate school entrants. The program requires a minimum of 36 graduate credits; field work is optional. Courses include Environmental Psychology, Clinical Techniques in Industrial Psychology, Human Engineering, and Seminar in Industrial Psychology.

Tuition: New York City residents, $75/credit; non-residents, $95/credit.

124 **CITY UNIVERSITY OF NEW YORK, HUNTER COLLEGE.** School of Health Sciences. 105 East 106th Street, New York NY 10029. (212) 650-6174. ERC Director: Irving J. Selikoff, M.D. Contact: George Kupchik, Sc.D., E.J. Stein, Ph.D., or M. Gomez, M.S. (212) 860-1284.

ENTRY 125

As part of the Mount Sinai School of Medicine Educational Resource Center, Hunter College offers B.S. and M.S. programs to prepare individuals to qualify as Occupational Hygienists. The B.S. degree is awarded upon completion of 128 credits. To enroll in the program, students must have completed a minimum of 60 college credits with a cumulative index of 2.5 or above and at least 8 credits of college biology, chemistry, or physics. Courses required for the program are: Ecology and Public Health, Basic Concepts of Public Health and Health Care, Principles of Epidemiology, Environmental Health Science, Community Health Education, Public Health--Organization and Administration (or Principles of Administration of Health Care Institutions), Environmental Measurements Laboratory, Field Study on Environmental Problems, and a Senior Seminar.

An M.S. degree requires 36 credits, field work and research, and a Thesis Seminar correlated with specialized projects. Students are admitted to the Master's program if they hold a bachelor's degree in either science or engineering with two years of chemistry (including organic), one year of biological sciences, one year of physics and a semester of college mathematics. (Deficiences may be made up). A satisfactory GRE, two references and a cumulative index of 2.5 or above are also required for matriculation. Core courses are Biostatistics, Principles of Epidemiology, Human Ecology, Environmental Health and Safety, and Chemistry of Environmental Pollution. Professional courses include Environmental Criteria and Standards, Systematic Analysis in Environmental Program Planning, Seminar in Current Environmental Health Problems, Application of Computers to Environmental Problems, Environmental Monitoring and Direct Instrumental Methods, Analytical Chemistry: Applications to Environmental Health Problem, Meteorological Aspects of Environmental Pollution, Radiological Hazards: Assessment and Control, Environmental and Work Physiology, Microbiology: Application to Environmental Health Problems, Radiation Biology, Environmental and Occupational Toxicology, Occupational Hygiene, Seminar in Toxicology, Practicum in College Teaching and Topics in Industrial Hygiene.

Tuition: (B.S.) residents, $40.00/credit to a maximum of $462.50/ term; non-residents, $55.00/credit to a maximum of $712.50/term. (M.S.) residents, $75/credit to a maximum of $750/term; non-residents, $95/credit to a maximum of $1,000/ term.

125 **CITY UNIVERSITY OF NEW YORK, WAGNER COLLEGE.** Department of Bacteriology and Health Sciences. Staten Island NY 10301. Contact: Marion L. Bevis, Ph.D., Department Chairman.

Offers B.S. with a major in Environmental Health through the Department of Bacteriology and Health Sciences for completion of 128 semester hours and an internship. Required courses include: Bacteriology and Immunology; Microbial Metabolism; Public Health; Environmental Sanitation; Water, Milk, and Food Microbiology; and Clinical Microbiology. A minimum of 30 semester hours in

bacteriology and health sciences, 8 hours in biology, and 16 hours in chemistry are also required for the major.

Charges: full-time students (12-18 credit hours), $3,250/year (2 semesters). Part-time students or for loads over 18 credit hours, $108/credit hour. Fees, $2/semester hour with a maximum of $25/semester.

126 **CITY UNIVERSITY OF NEW YORK, YORK COLLEGE.** Department of Natural Sciences, Environmental Health Science Program. Jamaica NY 11451. (212) 969-4330. Contact: Dr. Paul C. Lu, Coordinator, Environmental Health Science Program.

Offers B.S. in Environmental Health Science for completion of 128 credits. The program accepts applications from undergraduates with at least 64 semester credits and a GPA of 2.75. Participants receive training in recognizing, evaluating, and controlling environmental factors (such as chemical hazards, temperature extremes, radiation, and biological hazards) which may affect employees, patients, and customers. The program requires: 30 credits in one of the basic sciences; professional core courses, including Air Quality, Water Quality, Solid Waste Disposal, Toxicology, and Environmental Management; and 15 weeks of field experience in Environmental Health Science with one of the affiliations. Major discipline requirements include Epidemiology, Environmental Health Techniques, Biostatistics, Microbiology and Immunology, Organic Chemistry, Instrumental Methods of Analysis, and Physics.

Tuition: full-time New York State residents, $462.50/semester; full-time non-residents, $712.50/semester. Part-time New York State residents, $40.00/credit; part-time non-residents, $55.00/credit.

127 **COLORADO STATE UNIVERSITY.** Occupational Health and Safety Section, Institute of Rural Environmental Health, College of Veterinary Medicine and Biomedical Sciences (Industrial Hygiene and Chemical Epidemiology); and Department of Radiation and Radiation Biology. Fort Collins CO 80523. Contact: Roy M. Buchan (Industrial Hygiene) (303) 491-6151 or Eldon P. Savage (Chemical Epidemiology) (303) 491-7038, 114 Veterinary Sciences Building; or Dr. Max Zelle, Professor and Chairman, Department of Radiation and Radiation Biology (303) 491-5222, 143 Biochem-Radiation Building.

Offers a B.S., M.S., and Ph.D. in Environmental Health with emphasis in Industrial Hygiene and/or Chemical Epidemiology and M.S. and Ph.D. in Radiation Health. The Occupational Health specialty in the Environmental Health B.S. program produces practice-oriented OSH specialists able to recognize, evaluate, and prescribe methods for controlling workplace environmental hazards. Core courses include

Occupational Safety and Health, Environmental Toxicology, Environmental Health, Environmental Health Engineering, Radioactive Pollution in the Environment, Epidemiology, Applied Epidemiology, Health Planning and Administration, and an Environmental Health Internship. A laboratory experience acquaints students with workshop environment and monitoring equipment. The M.S. program emphasizes administration, health hazard prediction, and problem solving through advanced research methodology. Additional coursework includes Advanced Occupational Health, Industrial Hygiene Control Methods, Chemical Epidemiology, Public Health Administration, and a variety of electives. Selection of individual research and thesis topics is heavily influenced by applicability to field situations, since the main thrust of the program is production of practicing professionals.

Colorado State also offers M.S. and Ph.D. programs in Chemical Epidemiology which emphasize the design, implementation, and evaluation of environmental epidemiological studies through individual research. Core courses include Environmental Toxicology, Chemical Epidemiology, Applied Epidemiology, Public Health Administration, and a variety of interdepartmental electives. Students also are encouraged to enroll in applied statistics courses. Through the guidance of the student's graduate committee, thesis or dissertation topics and individual course work are selected to meet the needs of the student's career goals. Students with backgrounds in biology and chemistry who are interested in environmental studies are encouraged to apply.

The Radiation Health M.S. program covers topics such as Nuclear Technology and Society, Radiation Public Health, Radioecology, and Radiation Dosimetry, and requires completion of additional core courses, electives, and a departmental report on a topic approved by the student's graduate committee; in some cases, a thesis may be substituted. The program usually requires one year (four quarters) for completion. The Ph.D. program requires additional coursework and a dissertation and usually takes four to five years beyond the conclusion of baccalaureate work. Courses required for both postgraduate degrees include Nuclear Radiation Physics, Radiochemistry, Radiobiology, Radiological Physics, Special Problems in Radiation Health, Radiation Health Practicum, and Statistical Methods.

Charges: full-time (9-18 hours/semester) residents, $377.50/semester; full-time non-residents, $1,225.50/semester. Part-time (1-9 hours) residents, $28-$247/semester; part-time non-residents, $85-$703/semester.

128 **COLUMBIA UNIVERSITY**. Division of Environmental Sciences, School of Public Health. 60 Haven Avenue, B-1, New York NY 10032. (212) 694-3464. Contact: Dr. Granville H. Sewell, Associate Director of Division.

Offers Master of Public Health in Environmental Sciences/Occupational Health to prepare specialists for policy level positions in industry, labor, government, and other sectors concerned with industrial health conditions. Although the scope of the total program is comprehensive for the fields of occupational and environmen-

tal health, the focus is on prevention of cancer and other diseases related to toxic chemical substances. Courses include Biostatistics, Epidemiology, Toxicology, Community Noise, Health Administration, Environmental Sciences, Occupational Health, Environmental Management, Public Health Law, Occupational Health Law, Environmental Toxicology, Cancer Epidemiology, Occupational Medicine, Occupational Hygiene, and Occupational Safety. A practicum (internship) is completed in the fourth semester for a total of 45 credits for the M.P.H. If the applicant is qualified, 30 additional credits and a dissertation are required for the Doctor of Public Health in Environmental Sciences. Applicants to the Master's program should have a Bachelor's degree and science preparation through organic chemistry. Applicants must also demonstrate capability in the humanities or social sciences.

Tuition: $180/credit up to $2,245/term for 15-19 credits.

129 **DREXEL UNIVERSITY**. Environmental Studies Institute. 32nd and Chestnut Streets, Philadelphia PA 19104. (215) 895-2265. Contact: P. W. Purdom, Professor of Environmental Engineering.

Offers M.S. in Environmental Engineering or Environmental Science and an undesignated Ph.D. Both M.S. degrees offer a specialization in Occupational Health and require completion of 48 quarter credits of work, including a project. Ph.D. students have no prescribed requirements; a committee develops a program of study for the individual Ph.D. student. Candidates for the M.S. in Environmental Engineering must have a B.S. in engineering or make up requirements. Admission to the program for the M.S. in Environmental Science requires a B.S. or equivalent degree, integral and differential calculus, and at least two courses in chemistry. A candidacy exam is given to prospective Ph.D. students. All M.S. students take Environmental Health, Biostatistics, and Environmental Chemistry and complete a project or thesis for 6 to 9 quarter credits. Occupational Health students also take Industrial Hygiene, Environmental Physiology, Epidemiology, Toxicology, Industrial Ventilation, and Environmental Law and Public Health Administration. Electives include Radiological Health, Noise, a Toxicology Seminar, Environmental Problem Solving, and a variety of courses dealing with air and water pollution, solid wastes, environmental assessment, environmental chemistry, human factors, and management. Limited financial aid is available in the form of traineeships and research and teaching assistant positions.

Tuition: full-time M.S., $1,300/quarter; full-time Ph.D., $1,305/quarter. Part-time M.S., $120/credit hour; part-time post-Masters, $131/credit hour; part-time Ph.D. in absentia, $262/term.

130 **EAST CENTRAL OKLAHOMA STATE UNIVERSITY**. Department of Environmental Science, School of Environmental and Health Sciences. Ada OK 74820. (405) 332-8000 ext. 407. Contact: Dr. M. L. Rowe, Department Chairman.

Offers B.S. in Environmental Science for completion of 124 semester hours. Program is accredited by the National Environmental Health Association and prepares students for careers in environmental health or industrial hygiene. For admission a student must be a high school graduate and have a satisfactory score on the ACT. Courses include Industrial Hygiene, Epidemiology, Radiological Health, Environmental Health Administration, Institutional Health, Air Pollution Control Processes, and Environmental Engineering. A minor of 18 semester hours is required in chemistry, biology, physics, or mathematics. Recent graduates of the program are now working as industrial hygienists for the Occupational Safety and Health Administration and with the Oklahoma Department of Labor.

Tuition: residents, $11.95/semester hour (lower division) or $12.95/semester hour (upper division); non-residents, $18.75/semester hour (lower division) or $20.75/semester hour (upper division).

131 **EAST TENNESSEE STATE UNIVERSITY.** Department of Environmental Health, School of Public and Allied Health. Johnson City TN 37601. (615) 929-4268. Contact: Dr. Monroe T. Morgan, Chairman, Department of Environmental Health, Room 55, Lamb Health Building.

Offers B.S.E.H. and M.S.E.H. with options in OSH. Undergraduate admission requires graduation from an accredited high school, and out-of-state applicants must have been in the upper one-half of their graduating classes. Graduate admission requires graduation from an accredited college or university, a GPA of at least 2.5 on a 4.0 scale, 45 quarter hours of science courses, and from 1 to 3 years of applicable experience. The B.S.E.H. requires a total of 192 quarter hours, including at least 66 in environmental health courses. The M.S.E.H. requires a total of 48 quarter hours, including 6 credits for research and a thesis, and passing a final oral examination. The environmental health courses provide substantial occupational health content, and students may take administrative or specialist options, with emphasis in Industrial Hygiene and related courses. Core courses include Biostatistics, Epidemiology, and Environmental Health/Public Health. Those students pursuing the administration track take Administration, Management, and Planning, and specialists study Environmental Chemistry, Microbiology, and Air, Water, or Land Resource Management. A number of recent graduates have found positions in OSH, and expanded offerings are planned at the University.

Tuition: full-time undergraduate residents, $154/quarter; part-time, $14/hour. Full-time non-resident undergraduates, $312/quarter; part-time, $26/hour. Full-time graduate residents, $167/quarter; part-time, $16/hour. Full-time graduate non-residents, $312/quarter; part-time, $26/hour.

132 **GEORGE WASHINGTON UNIVERSITY.** Graduate School of Arts and Sciences, College of General Studies. 706 20th St., N.W., Washington DC 20052. (202) 676-3117. Contact: Jack W. Millar, M.D., Vivian Gill Professor

of Epidemiology and Environmental Health; Dr. Donald Lehman, Ph.D., Professor of Physics; or Professor Samuel Greenhouse, Chairman of the Department of Statistics.

Offers Master of Science in Special Studies in the field of Environmental Science to holders of a bachelor's degree who present undergraduate transcript and four letters of recommendation. The program emphasizes problems of the workplace environment. The degree program is off-campus and requires 36 semester hours of coursework; courses are offered in a planned sequence over a two-year period to meet the needs of students who must complete their studies on a part-time schedule. Required courses include Epidemiology and Environmental Health; Environmental Impact Statement Procedures and Environmental Law; Industrial Hygiene; Applied Epidemiology and Environmental Health; Environmental Science and Technology; Economics of the Environment and Natural Resources; Science, Technology, and Public Affairs; and Biostatistics. Other courses include Advanced Administrative Management and Administration in the Federal Government.

Tuition: $84/credit hour.

133 **HARVARD UNIVERSITY.** Occupational Health Program, Department of Physiology, School of Public Health. 665 Huntington Avenue, Boston MA 02115. (617) 732-1167. ERC Director: John M. Peters, M.D. Contact: William A. Burgess, Department of Physiology, or Douglas W. Cooper, Ph. D., Department of Environmental Health Sciences, (617) 732-1163.

Offers one-year and two-year S.M. programs in Physiology with emphasis on Industrial Hygiene or Radiation Health (Radiation Protection) as specified fields. Admission is determined by the Committee on Admissions and Degrees, but requirements generally include Graduate Record Examination scores and a baccalaureate degree in engineering or the physical and biological sciences. Programs lasting one year require completion of 40 credits, and two-year programs require 80 credits. Students wishing to continue beyond S.M. may pursue S.D. in these fields. Courses offered for these programs include Human Physiology, Epidemiology, Biostatistics, Aerosol Technology, Environmental Control (Ventilation), Environmental Control (Noise), Radiation Protection, Current Topics in Occupational Health, Basic Problems in Occupational Health and Industrial Environments, Identification and Measurements of Air Contaminants, Human Factors in Occupational Performance and Safety, Policy Issues in Occupational Health, Air and Gas Cleaning, Toxicology, Community Air Pollution, Tutorial in Industrial Hygiene, Environmental Health Management, and Meteorological Aspects of Air Pollution.

In addition to the programs offered above, the Department of Environmental Health Sciences offers an S.M. in Environmental Health Management. The candidate may specialize in Air Pollution, Industrial Hygiene, Radiation Protection, or Water Pollution Control. Participants complete courses from the area of specializa-

tion plus four or more courses in policy- or management-related areas, including courses such as Microeconomics, Environmental Law, Decision Analysis, and Systems Analysis. Approximately one-fourth of the student's time in the second year is spent on a Master's project involving research and the completion of a paper. A total of 80 credits are required for the Master's Degree. A Doctor of Science (Sc.D.) program is available to students who wish to continue beyond the S.M. program. Financial assistance in the form of traineeships is available through the university.

Tuition: full-time, $4,600/academic year; half-time $2,400. Costs include a health service fee for resident students enrolled for six or more credits.

134 **ILLINOIS STATE UNIVERSITY**. Department of Health Sciences, College of Applied Science and Technology. Normal IL 61761. (309) 436-8329. Contact: Mr. Charles Spencer, Chairperson, or Dr. Daryl Rowe, Environmental Health Program Director.

Offers B.S. in Environmental Health with a sequence in Industrial Hygiene to high school students graduating in the upper half of their class or who receive an equivalent score on the ACT. The program requires completion of 120 semester hours, with 42 of these earned at the senior college level. Courses include Environmental Health Aspects of Water and Wastewater, Occupational Health, Occupational Air Contaminants and Their Control, Occupational Physical Health Hazards and Their Control, Epidemiology, Industrial Hygiene Field Survey Techniques, Food Protection and Sanitation, Statistics, and Industrial Accident Prevention. A nine-semester-hour Industrial Hygiene Internship is also included.

Tuition: full-time (12 semester hours or more) residents, $353/semester; full-time non-residents, $853/semester. Part-time residents, $21/semester hour; part-time non-residents. $63/semester hour.

135 **JOHNS HOPKINS UNIVERSITY**. School of Hygiene and Public Health. 615 North Wolfe Street, Baltimore MD 21205. (301) 955-3295. ERC Director: Gareth M. Green, M.D. Contact: Robert J. Rubin, Ph.D., Director, Division of Environmental Toxicology, (301) 955-3045; Lawrence W. Green, M.P.H., Dr.P.H., head of Division of Health Education, Department of Health Services Administration, (301) 955-3623; and Diane G. Fogleman, Ph.D., Assistant Professor of Environmental Health Sciences, Division of Occupational Medicine.

Offers Ph.D. and postdoctoral research training in Environmental Toxicology to candidates with strong backgrounds in biological, chemical, or physical sciences. The program focuses on the prediction and evaluation of potential hazards to

humans posed by exposure to environmental chemicals. Subspecialties within this program include biochemical toxicology, neurochemistry and neurotoxicology, behavioral and developmental toxicology, and toxico-kinetics. Present investigations involve studies of the effects of carbon monoxide, lead, mercury, cadmium, and components used in the manufacture of various plastics. Because interest is focused on the mechanisms of toxic action, considerable emphasis is placed on the basic biochemical and physiological mechanisms involved in cell and organ function. The curriculum includes courses in Environmental Toxicology, Special Systems in Pharmacology and Toxicology, Behavioral Physiology, Occupational Health, Biostatistics, Histology, and Anatomy. Formal course work is supplemented by laboratory rotations, research seminars, and journal reviews.

Johns Hopkins also offers Sc.M., Dr.P.H., and Sc.D. in Occupational Health Education to prepare specialists in the planning, administration, and evaluation of occupational health education programs. Applicants should have a baccalaureate degree in biological or social sciences and at least one year of relevant experience. Students in this program fulfill all requirements for their respective degree programs in the Division of Health Education and also take selected courses in the Departments of Environmental Health Sciences, Behavior Sciences, and Administration. Courses which may be taken under the program include: Clinical and Sociomedical Aspects of Heart and Vascular Disease; Assessment of Educational Needs in Patient, Community, and Occupational Health; Communications Theories and Practice; Educational Strategies in Public Health and Medical Care; Continuing Education, In-service Training, and Consultation for Health Personnel; Interpersonal Theory and Skills in Health Education; Ethical Issues in Public Health; Advanced Theory and Methods in Health Education; Evaluation and Measurement in Health Education; and Research Seminars in Occupational Health Education and Cardiovascular Risk.

Johns Hopkins also plans to offer a specialized doctoral program in Environmental Epidemiology to prepare epidemiologists for surveillance of populations for the health effects of environmental exposures, investigation of episodes of acute toxic exposures, and research into the etiology of environmental or occupational diseases. The program would be a cooperative endeavor of the Departments of Epidemiology and Environmental Health Sciences. Applicants would be required to have a previous master's degree, a background in the health sciences, and preparation in chemistry, mathematics, and physiology.

Tuition: full-time, $1,125/quarter; part-time, $94/credit. Students are also assessed a one-time matriculation fee of $160.

136 **KANSAS STATE UNIVERSITY**. Occupational Safety and Health Center, Department of Industrial Engineering, College of Engineering. Durland Hall, Manhattan KS 66506. (913) 532-5606. Contact: Professor J. J. Smaltz, Director.

Kansas State is evaluating a proposed interdepartmental degree program leading to an M.S. in Industrial Hygiene designed for students who meet Graduate School standards and who have undergraduate degrees in biology, biochemistry, physics, chemistry, or engineering. Thirty semester hours of graduate credit will be required for the degree. Core courses would include Community Health, Occupational Safety and Health, Anatomy and Physiology, Public Health, Toxins in the Biological System, and Probability and Statistics. The program will be administered by the Industrial Hygiene Steering Committee and supported by faculty members from a variety of disciplines. Applicants would be required to have a bachelor's degree from an accredited college, adequate undergraduate preparation in the proposed major field or equivalent evidence of an appropriate background, and an undergraduate average of B or better in the junior and senior years.

Tutition and fees: residents, $348/semester for seven or more credits; $17/semester credit hour for six or less hours, plus $66 fees. Non-residents: $843/semester for seven or more credits; $50/semester hour for six or less hours, plus $66 fees.

137 **MISSISSIPPI VALLEY STATE UNIVERSITY.** Environmental Health Program, Biological Sciences Department. Itta Bena MS 38941. (601) 254-9041. Contact: Albert L. Love, M.P.H., R. S., Director of Environmental Health.

Offers B.S. in Environmental Health with emphasis on General Sanitation, Water Chemistry, and Occupational Health. Courses related to Occupational Health include Radiological Health, Occupational Health, Air Pollution, Occupational Health Instrumentation, Epidemiology, and Environmental Toxicology. Degree requirements include a minimum of 127 semester credit hours.

Tuition: off-campus residents, $305.00/semester; campus residents, $791.50/semester. Non-residents, $1,191.50/semester.

138 **NEW YORK UNIVERSITY MEDICAL CENTER.** Department of Environmental Medicine. 550 First Avenue, New York NY 10016. (212) 650-6174. ERC Director: Irving J. Selikoff, M.D. Contact: Morton Lippmann, Ph.D., or Paul J. Lioy, Ph.D., (212) 679-3200 ext. 5292.

As part of the Mount Sinai School of Medicine Educational Resource Center, NYU Medical Center provides professional training at the graduate level in Occupational Hygiene leading to an M.S. or Ph.D. degree. In this program, Occupational Hygiene consists of the occupational health core curriculum plus specialty training in component subdisciplines, which include Industrial Hygiene Engineering, Industrial Hygiene Chemistry, and Occupational Health Physics. The M.S. program requires a minimum of 36 credits and is open to candidates with a baccalaureate degree in

physical science or engineering who present satisfactory GRE scores. The Ph.D. program requires a minimum of 72 credits, of which 12 can be research credits, and a doctoral thesis. Candidacy for the Ph.D. is achieved through a written comprehensive examination and oral defense of thesis outline. The final requirement for the degree is an oral defense of the thesis. The core curriculum for both programs includes Environmental Contamination, Environmental Toxicology, Seminar on Current Problems in Environmental Health, Epidemiology and Biostatistics, and Environmental Hygiene Measurements. Additional courses include Occupational Diseases, Occupational Toxicology, Radiological Health, Environmental Hygiene Laboratory, Environmental Contamination Control in Industrial Operation, Aerosol Science, Health Effects of Non-Ionizing Electromagnetic Radiation, Radiological Physics, Radiochemical Analysis, Analysis of the Chemistry of Environmental Contaminants, Radiation Hygiene Measurements, Radiation Hygiene Laboratory, and Radiobiology. The M.S. program also provides a summer internship for applied industrial hygiene.

Tuition: $126/credit hour.

139 **OAKLAND UNIVERSITY.** Environmental Health Program, Department of Chemistry, College of Arts and Sciences. Rochester MI 48063. (313) 377-2320. Contact: Dr. Paul Tomboulian.

Offers B.S. in Environmental Health with an option in Occupational Health. The program is to be fully implemented in the next several years, and it is designed for generalists who intend to become practitioners or to continue with a graduate educational program. The degree requires 128 credits and emphasizes scientific foundations in mathematics (8 credits), biology (12 credits), physics (8 credits), and chemistry (22 credits). Specialized course work (30-40 credits) emphasizes analysis, effects, and control of toxic substances. Planned courses include Occupational Health, Sampling and Instrumental Methods, Ethics and Legal Issues, Environmental Standards and Measurements, Chemical and Physical Hazards, Industrial Operations and Ventilation, Problem Solving, and a summer Internship program.

Tuition: residents, $25/credit; non-residents, $50/credit.

140 **PENNSYLVANIA STATE UNIVERSITY, CAPITOL CAMPUS.** Mathematical Sciences Program. Middletown PA 17057. (717) 787-1600/1609. Contact: Dr. M. Susan Richman, Program Head, Mathematical Sciences.

Plans to offer a baccalaureate degree in Mathematical Sciences/Industrial Hygiene to students beginning the junior year in September, 1979. A total of 130 credits will be required, including 70 credits in residence and 60 credits of prerequisites with a 2.0 cumulative grade and a 2.4 GPA in science and math. Specific prerequi-

sites for admission are 8 credits in general chemistry, 5 credits in organic chemistry, 8 credits in physics, 3 credits in biology, 9 credits in calculus, 3 credits in college algebra, and 6 credits in English, including 3 in composition. Core courses for the program will include Human Physiology, Toxic Environments, Industrial Hygiene, Industrial Hygiene Application, Measurement/Control of Chemical Agents, and Measurement/Control of Physical Agents. Also required is a two-term Industrial Hygiene Internship (one in an industrial setting, one in a regulatory agency), Linear Algebra, Advanced Calculus, Applied Mathematical Statistics, Sampling Techniques and Experimental Design, Programming Techniques, and Language for Digital Computers. Recommended elective courses are Industrial Processes, Ventilation Design, Safety Systems, Business Law, Industrial Relations, Educational Training Methods, and Management Techniques.

Tuition: full-time (8 or more credits) residents, $411/term; full-time nonresidents, $911/term. Part-time residents, $51/credit; part-time non-residents, $115/credit.

141 **QUINNIPIAC COLLEGE.** Department of Biological Sciences, School of Allied Health and Natural Sciences. Mt. Carmel Avenue, Hamden CT 06518. Contact: Floyd A. Van Atta, Ph.D., Industrial Hygiene Program Director, Box 153, (203) 288-5251 ext. 388, or Philip P. Roets, D.Sc., Associate Professor, Box 260, (203) 288-5251 ext. 386.

Offers B.S. in Industrial Hygiene to high school graduates who present 4 units of English, 2 of mathematics, 1 of a laboratory science, 1 of history, and Scholastic Aptitude Test or equivalent; advanced standing is available by transfer or by CLEP exam. Courses include Anatomy and Physiology, Organic Chemistry, Physics, Biochemistry, Biometrics, Ventilation, Industrial Hygiene, Physical Chemistry, Industrial Toxicology, Instrumental Analysis, Environmental Health Practices (Air Pollution), Industrial Relations and Safety Management, Radiological Health, Industrial Epidemiology, Review and Interpretation of Environmental Health Standards, Environmental Design, and Summer Interships consisting of supervised field training in an official environmental health agency following the second and third years of study.

Tuition: $1,475/semester for full load (12-16 hours); fewer credits cost $95 each, and more than 16 credits cost $1,475 plus $55 for each hour over 16.

142 **RENSSELAER POLYTECHNIC INSTITUTE.** Department of Chemical and Environmental Engineering, School of Engineering. Troy NY 12181. (518) 270-6203. Contact: Dr. David Hansen, Chairman, Department of Chemical and Environmental Engineering.

Offers B.S., Master of Engineering, M.S., Doctor of Engineering, and Ph.D. in Environmental Engineering with 4 areas of options: Air Resources, Water Re-

sources, Radiological Health, and Solid Waste. Undergraduate admission is competitive and is based on high school performance, scores from the Scholastic Aptitude Test, College Board Achievement Tests, or American College Test, recommendations, and character and interests of applicants. Graduate admissions are based on undergraduate performance, recommendations, and Graduate Record Examination or Graduate Management Admission Test scores. B.S. requires 133 semester credits for graduation, M.Eng. requires 30, and Ph.D. and D.Eng. require 90 credits, thesis, and comprehensive examinations. Courses include Air Pollution: Sources and Effluents, Public Health, Environmental Radiation Safety Controls, Radiation Biology and Toxicology, Industrial Microbiology, and Environmental Acoustics.

Tuition: full-time undergraduates (12-21 credit hours/semester), $4,375/academic year; part-time undergraduates (under 12 credits), $130/credit hour. Graduate tuition is $130/credit hour.

143 **RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY.** Department of Radiation Sciences. Busch Campus, New Brunswick NJ 08903. (201) 932-2551. Contact: Dr. Frank Haughey, Radiation Sciences Group.

Offers M.S. in Radiation Sciences with options in Health Physics and Medical Physics. The degree requires completion of 30 semester credits, usually over the course of one year; thesis is optional. Admission requires a baccalaureate degree in science, engineering, or mathematics and acceptance by the Graduate School, which requires submission of GRE scores. The program includes a summer internship in Experimental Problems in Radiation Health, which involves work at Brookhaven National Laboratory. Other courses include Radiation and Radioactivity, Radiation Instrumentation, Radiation Chemistry, Radiation Instrumentation and Dosimetry, Radiation Biology, Special Topics in Radiation Health, Radiation Biophysics, Industrial Hygiene, and such electives as Air Sampling and Analysis, Environmental Science, Nuclear Engineering, Anatomy, Statistics, and Computer Programming.

Tuition: residents, $45/credit to a maximum of $540/semester; non-residents, $65/credit to a maximum of $780/semester.

144 **SOUTHERN ILLINOIS UNIVERSITY.** Safety Center. Carbondale IL 62901. (618) 453-2080. Contact: Dr. James E. Aaron, Coordinator.

Offers Master's program in Industrial Safety and Health with concentration in Industrial Health for completion of 40 hours of class, practical work, and observation. Core and required courses include Epidemiological Approaches to Disease Prevention and Control, Environmental Dimensions of Health Education, Vital Statistics, and Human Ecology. A required Practicum in Industrial Safety and Health

involves full-time student assignment to an industry for experience in industrial safety and health. Suggested elective courses include Current Literature in Health-Related Fields, Industrial Chemistry, Biochemistry, Physical Chemistry, Wastewater Treatment, Air Pollution Control, Food and Industrial Microbiology, Modern Optics, Human Engineering, a Special Project culminating in a research paper, participation in a Health Education Summer Conference, and a Field Experience in School, Community Health, or Safety Education.

Tuition: full-time residents, $369/term; full-time non-residents, $893/term.

145 **TEXAS A&M UNIVERSITY.** Department of Industrial Engineering. College Station TX 77843. (713) 845-5531. ERC Director: Marcus M. Key, M.D. Contact: Ralph J. Vernon, Ph.D., Assistant Department Head, Industrial Hygiene and Safety Engineering Division.

As part of the ERC program administered by the University of Texas School of Public Health, Texas A&M offers an M.S. in Industrial Hygiene for completion of 32 semester credits, a research thesis, and a comprehensive oral examination. Required courses include Industrial Safety Engineering, Industrial Hygiene, Instrumentation for Industrial Hygiene, Evaluation and Control of the Occupational Environment, Industrial and Environmental Toxicology, Human Physiological Response, and Statistical Analysis. Courses in Acoustics and Noise Control, Industrial Ventilation, Epidemiology, and Radiation Protection also are available.

Charges: residents, $4/credit hour (minimum $50) plus $144/semester in fees; non-residents, $40/credit hour plus $144/semester in fees.

146 **UNIVERSITY OF ARIZONA.** Arizona Center for Occupational Safety and Health (ACOSH), Toxicology Program. 320 Old Chemistry, Tucson AZ 85721. (602) 626-3027. ERC Director: Herbert K. Abrams, M.D., M.P.H. Contact: J. Wesley Clayton, Ph.D., Director, Toxicology Program.

Offers M.S. or Ph.D. in Toxicology with options in occupational, environmental, agricultural, analytical and forensic toxicology. The objective is to train students in the basic sciences related to toxicology and to develop expertise in the various areas of toxicology. The core curriculum consists of Pharmacology, Biochemistry, Human Physiology, Analytical Toxicology, Biotoxicology, Advanced Toxicology, and Courtroom Evidence. Relevant electives, including Research in Toxicology, yield a total of 30 hours of credit for the M.S. degree. A laboratory research project is required. Applicants must have a baccalaureate degree with a major in chemistry, including instrumental analysis, or in biology with a chemistry minor. The applicant also must submit a letter of intent, two letters of recommendation, and scores from the Graduate Record Examination. An expanded curriculum and research

program are now available for students wishing to obtain a Ph.D. in Environmental Toxicology, in which a specialization in Occupational Environment is possible. The University also has proposed an M.S. in Health Science with a field specialization in Industrial Hygiene.

Tuition: full-time Arizona residents, $225/semester or $32/unit; non-residents, $1,050/semester or $45/credit unit. Stipends up to $3,900 are available.

147 **UNIVERSITY OF CALIFORNIA, BERKELEY.** Department of Biomedical and Environmental Health Sciences, School of Public Health. Earl Warren Hall, Berkeley CA 94720. (415) 642-1681. Contact: Dr. Stephen M. Rappaport, Assistant Professor.

Offers M.P.H., M.S., and Ph.D. in Environmental Health Sciences with concentration in Industrial Hygiene. Applicants must have a baccalaureate or higher degree in the physical, chemical, or biological sciences, or in engineering with clear competence in upper division coursework (minimum GPA of 3.0/4.0) and in course selection (e.g., chemistry through organic, mathematics through calculus) and must present GRE scores. The M.S. requires 30 quarter units and submission of a thesis and is usually completed in two years; the M.P.H. requires 36 quarter units, an oral comprehensive examination, and breadth of knowledge in other public health disciplines, and it is completed in one to two years. The Ph.D. requires an oral qualifying examination, depth of knowledge in Industrial Hygiene and two minor areas, and completion of a dissertation, and it usually requires three to four years. Core courses for all degree programs include Probability and Statistics in Biology and Public Health, Principles of Industrial Hygiene, Industrial Hygiene: Physical Agent Hazards, Industrial Hygiene: Airborne Chemical Hazards, Occupational Health Practices, Industrial Hygiene Practices, Environmental Health Sciences: Biological Determinants of Health, Environmental Toxicology, Noise in the Occupational Environment, Occupational Diseases, Industrial Safety, and Epidemiology. Additional courses are selected to suit individual interests and to provide competence in other disciplines available at the Berkeley campus, including Ventilation Engineering, Ergonomics, and Medical Physics.

Charges: residents, $263.50/quarter; non-residents, $898.50/quarter.

148 **UNIVERSITY OF CALIFORNIA, IRVINE.** Department of Community and Environmental Medicine, College of Medicine. Irvine CA 91717. (714) 833-5853/6269. ERC Director: B. Dwight Culver, M.D. Contact: Joan Brown, Administrative Assistant.

Offers an M.S. and Ph.D. program in Environmental Toxicology. Candidates entering the M.S. and Ph.D. program may have undergraduate backgrounds in Chemistry,

Biology, Biochemistry, Physiology, or Pharmacology. Medical students are encouraged to enter this program as candidates for a combined M.D./M.S. or M.D./Ph.D. degree. Courses for the M.S. program include Medical Pharmacology and Toxicology, Basic Statistics, Neuroanatomy, Toxicology, Environmental Toxicology, and a research thesis. Courses for the Ph.D. program include Medical Pharmacology, Advanced Topics in Medical Pharmacology, Basic Statistics, Neuroanatomy, a computer science course such as Information Computer Sciences, and a research thesis.

The University also plans to offer an M.S. in Engineering and a Ph.D. in Engineering beginning in the fall of 1980. Graduate admission requires a baccalaureate degree in engineering or substantial work experience in a directly-related field combined with a baccalaureate degree in a related scientific field; students in the latter category may be required to take supplemental basic engineering coursework. Courses for the M.S. degree will include Water Resource and Water Quality; Air Resources Engineering; Biostatistics, Physiology, Chemistry, and Biochemistry for Engineers; Public Health Aspects of Environmental Quality; Vibration and Noise Control; Standard Setting, Monitoring, and Analysis in the Workplace; Industrial Processes and Occupational Epidemiology; Environmental Control and Conditioning; Advanced Environmental Monitoring and Analysis; Fundamentals of Air Quality in Occupational Health; Industrial Waste Water Treatment; Engineering Design for Occupational Health; Work Physiology; Toxicology; Occupational Health Engineering Practices; Occupational Health Engineering project; and Environmental Toxicology.

Charges: registration fee $348/year, educational fee $360/year, and student fee $127/year. Stipends are available.

149 **UNIVERSITY OF CINCINNATI.** Department of Environmental Health, College of Medicine. 3223 Eden Avenue, Cincinnati OH 45267. ERC Director: Raymond R. Suskind, M.D. Contact: Mrs. Jean Meyer, Graduate Studies Office, (513) 872-5716, or Dr. Dale Johnson, (513) 872-5759; Dr. Bernard E. Saltzman, Industrial Hygiene Program Director, (513) 872-5732; Dr. C. Ralph Buncher, Program Director, Division of Epidemiology and Biostatistics, Mail Location 183, (513) 872-5631; and Dr. P. B. Hammond, Program Director, Division of Toxicology, (513) 872-5745.

Offers M.S. and Ph.D. in Industrial Hygiene. Admission requirements are a B.S. degree in engineering, physical science, or biology, a superior academic record, and Graduate Record Exam scores or a successful record of graduate studies. Twenty new students are admitted each year. The M.S. requires one year (45 quarter hour credits and thesis), and the Ph.D. requires three to four years (135 quarter hour credits and thesis). Core courses include an Environmental Health Seminar, Environmental Hygiene Technology, Air Sampling and Analysis, Occupational Health, Physiology, Biostatistics, Industrial Ventilation, Toxicology, Industrial Hygiene Laboratory, and Basic Industrial Safety.

The Department of Environmental Health also provides a training program in Epidemiology or Biostatistics leading to an M.S. Admissions requirements include GRE scores and a baccalaureate degree in biology, mathematics, chemistry, engineering, or related fields. The M.S. requires 45 credits (including thesis) and is usually completed in one to two years. The Ph.D. requires three to four years after the baccalaureate degree, 135 quarter credits, and a dissertation. Students take courses in environmental and occupational epidemiology, biostatistics, and environmental health, including Industrial Hygiene, Toxicology, Physiology, Industrial Safety, Health Physics, Occupational Medicine, and Radiation Health. Biostatistics students also take Mathematical Statistics. Students participate in ongoing research projects. Postdoctoral fellowships are available.

The Division of Toxicology offers a Ph.D. in Industrial Toxicology to prepare graduates for careers in the assessment of the toxicity of chemicals to which workers may be exposed. The program lasts four years and consists of didactic instruction and laboratory experience. An original thesis is required. During the first year, students are required to master the basic elements of medical physiology, biochemistry, and pathology. Students take specified courses in toxicology dealing with Pharmacokinetics, Mechanisms of Toxicity, Laboratory Methods, and Safety Evaluation. In the second year, students complete essentially all of the formal course work. Rotation through faculty research laboratories begins in the spring of the first year and extends into the second year. The graduates of the program find employment in academic institutions, government laboratories, and industrial laboratories. Admission to the program requires a baccalaureate degree, a GRE score of at least 1,200, and an undergraduate GPA of 3.0 on a scale of 4.0. A limited number of fellowships are available which provide a stipend of $3,900/year plus tuition costs.

Tuition: residents, $1,960/year; non-residents, $3,380/year.

150 **UNIVERSITY OF FLORIDA.** Environmental Engineering Sciences Department, College of Engineering. Gainesville FL 32611. (904) 392-0846. Contact: Professors Paul Urone or Dale A. Lundgren.

Offers Master's degree in Environmental Engineering Sciences, including areas of concentration in Air Pollution and Industrial Hygiene. Thesis and non-thesis options are available to both engineering and non-engineering undergraduate students. Master's degree with thesis requires a minimum of 45 quarter hours of courses; the Master's degree non-thesis option requires a minimum of 54 quarter hours. The thesis must be written in the area of concentration; the non-thesis option requires the preparation of a technical paper with presentation at a seminar in the final quarter. Required courses include departmental core courses in Environmental Biology, Environmental Chemistry, Statistics, and Computer Programming. Area of concentration courses include selections from Public Health Engineering, Environmental Health, Occupational Health, Air Sampling and Analysis, Health Hazards of Man's Environment, Air Pollution Control Measures, and Principles of Ventilation.

Tuition: graduate level courses, $22/hour in-state and $62/hour for out-of-state students. Thesis research fees are $24 and $64/hour for in- and out-of-state students, respectively.

151 **UNIVERSITY OF HAWAII.** Department of Public Health Sciences, School of Public Health. 1960 East-West Road, Honolulu HI 96822. (808) 948-8894. Contact: Dr. Alexander M. Dollar or Dr. Arthur Kodama.

Offers M.P.H. and M.S. in Environmental Health Sciences with a concentration in Occupational Health-Industrial Hygiene. The non-thesis option requires 30 semester credits, including a field study and a comprehensive examination. The M.S. thesis option requires 30 credits, including thesis. Applicants must have a baccalaureate or higher degree in the physical, chemical, or biological sciences, engineering, or medicine. Courses include Epidemiology, Biostatistics, Environmental Health, Environmental Factors, Environmental Monitoring, Occupational Health, and Industrial Hygiene.

Charges: full-time residents, $275.00/semester; full-time non-residents, $687.50/semester.

152 **UNIVERSITY OF ILLINOIS AT THE MEDICAL CENTER.** School of Public Health. Post Office Box 6998, Chicago IL 60680. (312) 996-2591. ERC Director: Bertram W. Carnow, M.D. Contact: Dr. Edward R. Hermann, Program Director and Professor of Occupational and Environmental Medicine.

Offers M.P.H., M.S., Dr.P.H., and Ph.D. in Industrial Hygiene to qualified holders of baccalaureate degrees in engineering and the physical and biological sciences. The program is directed toward preparing industrial hygiene practitioners and researchers capable of serving at the professional level in industry, government, or academia. The Master and Doctor of Public Health degrees are professional school offerings and may be completed in one year and three years, respectively. The Master of Science and Doctor of Philosophy degrees are oriented toward scientific research and specialization. The M.S. degree requires 50 quarter hours of course credits and 22 credits of research and a thesis; it may be completed in 18 months. The Ph.D. program must be completed within seven years of first enrollment. Typically, the Industrial Hygiene curriculum includes courses in Biometry, Epidemiology, Human Physiology, Environmental Medicine, Toxicology, Occupational Psychology, Occupational Health, Radiation Protection, and Safety.

Tuition: residents, $332/quarter; non-residents, $742/quarter.

153 **UNIVERSITY OF IOWA.** Institute of Agricultural Medicine and Environmental Health, Oakdale Campus. Oakdale IA 52319. (319) 353-4872. ERC Director: Conrad P. Straub, Ph.D. Contact: Clyde M. Berry, Ph.D., Program Director.

As part of the program of the University of Minnesota ERC, the University of Iowa offers the Ph.D. in Industrial Hygiene. Admission standards permit some flexibility, but basically require an undergraduate degree in a science area, a GPA of 3.0 on a 4.0 scale, and a composite score of 1,050 on the GRE. In addition to basic didactic preparation in Industrial Hygiene, there is an opportunity to acquire competence in additional areas, such as biostatistics, toxicology, and epidemiology. Preceptorships are required that are appropriate to the goals of the candidate. Enrollment is limited in order to provide a maximum student-faculty interchange.

Tuition: residents, $1,459/year (two semesters and summer program); non-residents, $3,000/year. Six traineeships providing a stipend of $3,900 and covering tuition and other fees are offered through funds from the NIOSH Educational Resource Center program.

154 **UNIVERSITY OF KANSAS.** Department of Radiation Biophysics. 140 Nuclear Reactor Center, West Fifteenth Street, Lawrence KS 66044. (913) 864-3867. Contact: Professor Benjamin S. Friesen, Chairman, Department of Radiation Biophysics, or Dr. Edward I. Shaw, Professor.

Offers B.A., B.S., M.S., and Ph.D. in Radiation Biophysics. B.A. or B.S. requires minimum of 124 semester hours, M.S. requires minimum of 30 semester hours and a thesis, and Ph.D. requires dissertation and approximately 50 hours of graduate courses. Courses include Radiation Protection, Radiation Biology, Dosimetry and Shielding, Health Physics Lab, Radiation Dosimetry Lab, Environmental Radiation and Nuclear Power, Radiological Controls, and Radiation Biophysics Research. Admission to the graduate programs normally requires a GPA of 3.0/4.0 and a satisfactory GRE score.

Tuition: full-time (more than 6 hours/semester) residents, $344.40/semester; full-time non-residents, $839.40/semester. Part-time residents, $28.85/credit; part-time non-residents, $61.85/credit.

155 **UNIVERSITY OF LOWELL.** Department of Pure and Applied Physics, Radiological Sciences Program. Lowell MA 01854. (617) 452-5000 ext. 234, 543, 738. Contact: Kenneth W. Skrable, Ph.D., Professor of Radiological Sciences.

Offers B.S. in Radiological Health Physics and M.S. in Radiological Sciences and Protection. B.S. requires 126 credits for graduation and the M.S. requires 30 gradu-

ate credits, including either nine credits for an acceptable thesis or three credits for an acceptable project in the field. Undergraduates are encouraged to participate in summer training programs established with cooperating nuclear and radiation facilities; this training acquaints the student with current equipment and methods in the profession of radiation protection. Courses for the two programs include Radiation Safety and Control, Radiological Sciences, Electronic Product Radiation, Radiation Physics and Shielding Design, Radiation Dosimetry, Environmental Toxicology and Epidemiology, Radiation Biology, Criticality and Nuclear Reactor Safety, Reactor Design, and Radioisotope Techniques.

Tuition: undergraduate residents, $585/year; undergraduate non-residents, $1,450/year. Graduate residents, $33.50/credit; graduate non-residents, $65.00/credit. NOTE: Residents of any New England state who qualify for study under the New England Regional Student Program are charged the resident tuition fees.

156 **UNIVERSITY OF MASSACHUSETTS AT AMHERST.** Division of Public Health, School of Health Sciences. Amherst MA 01003. Contact: Salvatore R. DiNardi, Associate Professor and Chairperson, Environmental Health Program, (413) 545-2797, or Stuart Hartz, Associate Professor and Chairperson, Biostatistics/Epidemiology Program, (413) 545-0432.

Offers B.S. in Public Health with an Industrial Hygiene option. Undergraduate admission requires high school graduation or equivalent and SAT scores. B.S. program participants complete 120 credit hours in a basic sciences curriculum that includes calculus, physics, physiology, microbiology, and chemistry. Core courses include Occupational Health, Radiation Protection, Environmental Toxicology, Air Pollution, Environmental Instrumentation, Environmental and Occupational Health Standards, Biostatistics, Epidemiology, Environmental Health Practices, and Public Health Administration. An M.S.P.H. with a specialization in Occupational Health is offered for completion of 65 credit hours over two years. The program prepares participants to deal with toxic substances and hazardous conditions in the workplace, implementation of control measures, air and biological monitoring and analysis, and innovation, policy development, and interaction with other professionals, managers, and workers. Admission requires GRE scores, two recommendations, undergraduate transcripts, and a baccalaureate degree in engineering or sciences. In addition to basic Public Health core courses (Epidemiology, Biostatistics, Environmental Health, and Public Health Practices), the program provides training in Industrial Hygiene Evaluation, Air Sampling and Analysis, Industrial Toxicology, Environmental Sampling and Biological Monitoring, Radiological Health, and Toxic Substances in the Workplace.

A Ph.D. program in Occupational Health and M.S.P.H. and Ph.D. programs with specialties in Occupational Health Epidemiology are planned for the fall semester in 1980.

Undergraduate program tuition: residents, $480/year; non-residents, $1,550/year. Graduate program tuition: Massachusetts or New England residents, $335/semester; non-residents, $775/semester, plus approximately $50 in fees per semester.

157 **UNIVERSITY OF MICHIGAN.** Department of Environmental and Industrial Health, School of Public Health. Ann Arbor, MI 48109. (313) 764-2594. Contact: Professor Ralph G. Smith.

Offers M.P.H. and Dr.P.H. in Industrial Health through the School of Public Health and M.S. and Ph.D. through the Rackham School of Graduate Studies. Programs are intended for physical scientists, biologists, and engineers interested in careers in research, operations, and administration in industrial hygiene programs in industry, government, and other organizations. Admission requires a baccalaureate degree with courses in mathematics, chemistry, and physics, an undergraduate GPA of 3.0, and GRE scores. M.P.H. requires 36-60 credit hours (depending on background and experience of student), including courses in Public Health Practice and Public Health Organization and Administration to meet School core requirements; the program takes 2.5-5 terms of full-time study. M.S. requires a minimum of 36 credit hours and 2.5-5 terms. Dr.P.H. and Ph.D. require about 3 years beyond the Master's requirements; these programs include qualifying and preliminary examinations, research and preparation of a dissertation, and final examination and defense of the thesis. Courses for the Master's programs include Industrial Hygiene, Industrial Hygiene Control, Air Sampling and Analysis, Instrumental Analysis, Epidemiology, Biostatistics, Ventilation, Toxicology, Industrial Safety, Computer Applications, Physical Stress, Radiation Physics, Community Air Pollution, In-Plant Studies, Seminars, Biomechanics, and Physiology. Students are encouraged to utilize 2-4-month paid summer internships.

Tuition for School of Public Health or Rackham School of Graduate Studies: full-time Michigan residents, $840/term; full-time non-residents, $1,900/term. Part-time (8 credit hours or less) residents, $109 for first credit hour and $94/credit hour thereafter; non-residents, $227 for first credit hour and $212/credit hour thereafter in any term.

158 **UNIVERSITY OF MINNESOTA.** Environmental Health Program, School of Public Health. 1158 Mayo Memorial Building, 420 Delaware Street S.E., Minneapolis MN 55455. (612) 373-8080. ERC Director: Conrad P. Straub, Ph.D. Contact: Charles E. McJilton, PH.D., Program Director.

Offers M.P.H., M.S. and Ph.D. in Occupational Health-Industrial Hygiene. Applicants with a baccalaureate degree from any of the science disciplines are considered, provided they have a strong chemistry background. Courses include a three-quarter core sequence in Industrial Hygiene, Toxicology, Epidemiology, Biostatistics, and

Air Analysis, and a variety of supporting elective courses in Air Pollution, Particle Technology, Ventilation and Radiological Health. Ph.D. applicants are expected to have focused their thinking about a research project and to present a written statement about their research goals. The program is intended to combine academic work with the maximum practical field experience possible. Since the University of Minnesota is one of the NIOSH Educational Resource Centers, contact is provided with students from occupational medicine, occupational health nursing, and safety engineering as part of the team approach to the control of workplace hazards.

Tuition: M.S./Ph.D. residents, $31.00/credit; non-residents, $86.50/credit. M.P.H. residents, $357.00/quarter; non-residents, $982.00/quarter.

159 **UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL.** Departments of Environmental Sciences and Engineering, Biostatistics, and Epidemiology. School of Public Health. 201 H, Chapel Hill NC 27514. ERC Director: David A. Fraser, Sc.D. Contact: David A. Fraser, Sc.D., Professor, Department of Environmental Sciences and Engineering, (919) 966-1023; Michael J. Symons, Associate Professor of Biostatistics, (919) 966-4181; and Carl M. Shy, M.D., Professor, Department of Epidemiology, (919) 966-2358.

The Air and Industrial Hygiene Program offers M.S., M.P.H., M.S.P.H., M.S.E.E., and Ph.D. in Environmental Sciences and Engineering to applicants with a B.S. or M.S. in engineering, chemistry, physics, or biology and preparation in calculus, inorganic and organic chemistry, and classical and modern physics. Scores from the aptitude section of the GRE are required. The minimum program consists of 30 semester hours of study, including at least 18 hours of core courses. An additional 3-6 hours may be required, depending upon the degree selected and the area of specialization within the program. The program may be completed in one year and a summer, or it may require a second year to take additional elective coursework and to complete a more extensive research project. Requirements for the doctoral program are developed with the individual's doctoral committee; at least 15 and preferably 21 hours of course work are taken in the major field. A minimum of four semesters of full-time residence are required. Core courses include Principles of Statistical Inference (or Probability and Statistics), Epidemiology in Environmental and Occupational Health, Applied Physiology and Toxicology, Industrial Hygiene Practice, Air and Its Contaminants, Industrial Hygiene Engineering Control Design (for M.S.E.E. candidates), Industrial Hygiene Laboratory, and Master's Technical Report.

The Department of Biostatistics offers M.S.P.H., M.S., Dr.P.H., and Ph.D. programs to prepare biostatisticians to participate in the conduct of research in occupational health and to offer professional statistical support to industrial hygienists, occupational physicians, epidemiologists, and other professionals in occupational health. The master's programs emphasize basic statistical and occupational health skills

with varying intensities of statistics and applications to occupational health, depending upon the candidate's background. Candidates at the master's level are holders of bachelor's degrees with good undergraduate records, competence in mathematics through calculus, and experience and/or education in environmental or occupational health. At the doctoral level, the candidate's background may be in one or more of a number of areas, in addition to theoretical or applied statistics, including toxicology, pharmacology, biochemistry, industrial hygiene, biophysics, occupational medicine, epidemiology, engineering, and mathematics. The master's programs require 9-24 months of course work, a minimum of 30 semester hours, and 10 weeks of field training or consultation experience. In addition to coursework in statistics and occupational health, the curricula for both programs include practical training that uses statistics in research and field training experience. Analysis of occupational health data and summer placements with the Occupational Health Studies Group at UNC and NIOSH are usual mechanisms for this type of training. The doctoral programs require a dissertation and about 30 hours beyond Master's requirements.

The Department of Epidemiology offers M.P.H., M.S.P.H., Ph.D., and Dr.P.H. programs in Occupational Epidemiology. Trainees are expected to achieve proficiency in four areas: basic epidemiological principles and methods, basic biostatistical methods as needed by the practicing epidemiologist, substantive knowledge of occupational health problems, and application of epidemiological methods to research on the identification of occupational health hazards. Candidates must have a baccalaureate degree in a biological discipline and must offer competitive test scores from the GRE. In addition to core courses, like Principles of Epidemiology and Principles of Statistical Inference, students are expected to take two or more courses in biostatistics and several courses on specific epidemiological topics, including Advanced Methods in Environmental and Occupational Epidemiology. A thesis and completion of a final written examination also are required for the Master's degrees. Students in programs leading to the doctoral degree are required to pass a comprehensive written examination, to complete two post-Master's academic years in residence, and to prepare a dissertation on a topic related to occupational health.

Tuition and fees: residents, $385.50/semester; non-residents, $1,117.50/semester. Note: In-state tuition rates apply to non-residents attending the School of Public Health under the Southern Regional Education contract for participating states.

160 **UNIVERSITY OF OKLAHOMA HEALTH SCIENCES CENTER.** Department of Environmental Health, College of Health. P.O. Box 26901, Oklahoma City OK 73190. (450) 271-2070. Contact: Robert Y. Nelson, Ph.D., Associate Professor.

Offers flexible and interdisciplinary programs leading to M.P.H, M.S., Dr.P.H. and Ph.D. with specialty in Occupational Health (Industrial Hygiene). The Depart-

ment of Environmental Health has program study areas in Industrial Hygiene, Environmental Safety, Air Quality, Environmental Toxicology, Water Quality, Environmental Management, and General Environmental Health. A typical curriculum for the M.S. would include Occupational Hazards (Industrial Hygiene), Industrial Noise, Physiological Mechanisms, Toxicology, Ventilation, Air Sampling and Analysis, Industrial Hygiene Laboratory, Air Pollution Control Engineering, Ergonomics, Human Factors Engineering, Fine Particle Analysis, Radiological Health, Occupational Safety, In-plant Industrial Hygiene Practice, Biostatistics, Epidemiology, and Environmental Health. A minimum of 44 semester hours are required for the M.S. or M.P.H. The Ph.D. or Dr.P.H. require 70 semester hours of course work plus a dissertation.

Charges: residents, $20.75/credit hour plus $6.00/semester health fee. Nonresidents: $60.75/credit hour plus $6.00/semester health fee.

161 **UNIVERSITY OF PITTSBURGH.** Departments of Industrial Environmental Health Sciences, Radiation Health, Epidemiology and Biostatistics, Graduate School of Public Health. 130 DeSoto Street, Pittsburgh PA 15261. Contact: Department of Industrial Environmental Health Sciences, Dr. John G. Frohliger, Associate Professor of Industrial Hygiene and Air Chemistry, (412) 624-3043; Professor Maurice A. Shapiro Professor of Environmental Health Engineering, (412) 624-3113; Dr. Yves Alarie, Professor of Respiratory Physiology and Toxicology, (412) 624-3047; Department of Radiation Health, Dr. Niel Wald, Chairman and Professor, (412) 647-3495; Department of Epidemiology, Dr. Edward P. Radford, Professor of Epidemiology, (412) 647-3057; Department of Biostatistics, Dr. Philip Enterline, Chairman and Professor, (412) 624-3032.

The Graduate School of Public Health offers M.P.H., M.S. in Hygiene, Dr.P.H., and Sc.D. in Hygiene. Applicants to the M.S. and Sc.D. programs must have a baccalaureate degree with preparation in mathematics and in biological or social sciences. Applicants for the M.P.H. and Dr.P.H. degrees should, in addition to the above, have a health-related degree or extensive work experience in the health field. The Master's degrees require at least 30 credits of course work or equivalent knowledge and 2.5 terms of residence, while the Dr.P.H. degree requires at least 4 terms of residence and the Sc.D. degree requires a minimum of 6 terms of residence.

The Department of Industrial Environmental Health Sciences has programs in Industrial Hygiene and Air Engineering, Toxicology (Ph.D. or D.Sc. only), and Environmental Health. Courses in the Department include Occupational Health, Environmental and Work Physiology, Industrial Hygiene, Analytical Methods in Industrial Hygiene, Industrial Ventilation, Industrial Hygiene Practice, Occupational Safety, Applied Toxicology, Control of the Acoustic Environment, Effects of Noise on Man, Architectural Acoustics, Noise Reduction, Sound Absorbing Porous Materials, Air Resources Management Measurements, Industrial Medicine, and

Properties of Dusts, Smokes, and Mists. There are also courses in Health Aspects of Water Quality, Environmental Control, Applied Water Chemistry, Applied Aquatic Biology, Sanitation of Natural Waters, Environmental Microbiology, Water Systems Measurement, Industrial Wastes and Their Treatment, Environmental Health Practice, Solid Waste Management, Environmental Health Law, Water and Waste Management, and Water Quality Management.

The Department of Radiation Health has programs in health physics, radiobiology, radiation chemistry, and medical physics. Courses include Radiation Health, Applied Health Physics and Dosimetry, Radiobiology, Reactor Hazard Evaluation, Professional Practice in Radiation Protection, Scientific Bases of Radiation Protection, and Radiation Dosimetry and Instrumentation.

The Department of Epidemiology includes courses in chronic disease epidemiology and epidemiology of environmental diseases, with special emphasis on the application of epidemiologic methods of study of occupational diseases.

The Department of Biostatistics has a training program for research in occupational health and safety with emphasis on identification and quantification of occupational hazards. Required courses include Biostatistics, Epidemiology, Industrial Hygiene and Environmental Health. Both Master's and doctoral training involve ongoing research in occupational health and safety within the School with emphasis on research approaches and analytic methods.

Tuition: residents, $840/semester for 9 or more credits, $74/credit for less than 9 credits; non-residents, $1,140/semester for 9 or more credits, $105/credit for less than 9 credits.

162 **UNIVERSITY OF ROCHESTER.** School of Medicine and Dentistry, Rochester NY 14642. Contact: Dr. J. Crispin Smith, Department of Pharmacology and Toxicology, Program Director, (716) 275-4339, or Ms. Ilona J. Passineau, Secretary, (716) 275-5926; or James R. Coleman, Ph.D., Department of Radiation Biology and Biophysics, (716) 275-3891.

The graduate phase of the Toxicology Training Program, which takes about four years of full-time course work and research and leads to a Ph.D., prepares students for research and teaching in toxicology with positions in academic institutions, government and industry. The program offers a graduate core curriculum in toxicology with a broad range of topics, including environmental, behavioral, genetic and inhalation toxicology and compartmental analysis. Formal courses in Biochemistry, Physiology, Pathology, and Pharmacology are augmented by a series of seminars and lectures by distinguished visiting scientists. In addition to predoctoral training, a one-year postdoctoral fellowship is offered to persons with doctoral degrees in other areas. A small number of students also are admitted to a three- or four-semester M.S. program. Entering students should have undergraduate prepara-

tion in chemistry, biology, physics and mathematics. Official transcripts from each institution attended, GRE scores, and a minimum of two letters of recommendation also are required. Financial aid is available.

The Department of Radiation Biology and Biophysics offers M.S. and Ph.D. programs in Radiation Biology to holders of baccalaureate degrees in the basic sciences. Courses in the programs include Biochemistry, Cellular and Molecular Radiobiology, Laboratory Methods in Biochemistry and Biophysics, Radiation Physics, Biophysics, Physics and Chemistry of Energy Sources and Products, Pathobiology of Radiation and Chemical Toxicants, Statistical Analysis, and Introduction to Research. A total of 30 credit hours are required for the M.S., and 90 credits are required for the Ph.D. All students accepted for the Department will be considered for financial aid.

Tuition: $147/credit hour or $4,400/year.

163 **UNIVERSITY OF SOUTHERN CALIFORNIA.** Institute of Safety and Systems Management, University Park, Los Angeles CA. (213) 741-6045. ERC Director: B. Dwight Culver, M.D. Contact: John V. Grimaldi, Ph.D., Institute Associate Director.

As part of the ERC program administered by the University of California at Irvine, USC offers an M.S. degree in Industrial Hygiene. Graduate admissions require a Bachelor's degree from an accredited college or university, a minimum GPA of 2.75, satisfactory scores on verbal and quantitative aptitude portions of the GRE, two letters of recommendation, and a personal interview. In addition candidates will be required to have earned their Bachelor's degree in engineering or physics, chemistry, or biology or to have successfully completed specific courses in the sciences and mathematics. Core courses include Introduction to Safety and Health, Principles of Toxicology, Environmental Engineering, Environmental Chemistry, Environmental Engineering Lab, Problems in Environmental Health, Human Factors, Air Pollution Control, Environmental Systems Analysis, Instrumental Methods in Environmental Analysis, Dust and Mist Collection, and Chemical Reactions in the Atmosphere. A total of seven new courses are currently under development.

Tuition: $2,100/semester for 15-18 units, or $140/credit hour. For stipend information, contact Dr. John Grimaldi.

164 **UNIVERSITY OF TENNESSEE, KNOXVILLE.** Department of Audiology and Speech Pathology, College of Liberal Arts. Knoxville TN 37916. (615) 974-5017. Contact: Dr. David Lipscomb, Professor of Audiology and Speech Pathology, (615) 974-4123.

Offers M.A. in Audiology with specialty in Industrial Audiology for completion of 45 quarter hours and a thesis or for 48 quarter hours without a thesis. Admission is based on an applicant's undergraduate record and on Graduate Record Exam scores. Courses are from a variety of departments, including Mechanical Engineering, Industrial Engineering, Psychology, and Audiology and Speech Pathology, and include Environmental Noise, Industrial Safety, Organizational-Industrial Psychology, Noise and Audiology, Hearing Conservation, Sound Measurement and Analysis in Hearing Conservation, and Practicum in Hearing Conservation.

Charges: residents, $156/quarter maintenance fee or $25/quarter hour, with $66/quarter minimum; non-residents, $240/quarter maintenance fee plus $284/quarter tuition or $48/quarter hour, with $144/quarter minimum. All students pay additional Programs and Services fee of $15/quarter.

165 **UNIVERSITY OF TEXAS. SCHOOL OF PUBLIC HEALTH.** Houston TX 77025. (713) 792-4312. Contact: Marcus M. Key, M.D., Professor of Occupational Medicine, Director, Texas Occupational Safety and Health ERC; Robert A. Wise, M.D.; D. Jack Kilian, M.D.; or James W. Hammond, M.S., P.E., C.S.P., C.I.H.

Offers M.P.H., M.S., Dr.P.H., and Ph.D. in several fields, including Occupational Health and Environmental Sciences. Admission requirements include a high-quality undergraduate education, an appropriate baccalaureate, advanced, or professional degree, a strong background in biological and physical sciences, and satisfactory performance on the GRE. The length of time required for degree completion varies according to the qualifications of candidates and the design of individual academic programs. Students are expected to demonstrate skills in epidemiology and biometry prior to completion of their program. The remainder of the curriculum is selected from a wide range of content areas, including Environmental and Occupational Health, Clinical Occupational Medicine, Environmental Measurements, Hazards Control, Environment Microbiology, Environmental Radioactivity and Radiation, Industrial Hygiene, Ergonomics, and Toxicology. In addition to the course work, the Master's programs require either a comprehensive examination or the presentation of a thesis or project. The doctoral programs require course work, a qualifying examination, and a doctoral dissertation. Previous training, experience, and career goals have a strong influence on the design of individual curricula. The program provides opportunities for physicians to prepare for Board certification in preventive medicine, with a subspecialty in occupational medicine. Residencies are available for both the academic and in-plant years.

Charges: residents, $33/quarter; non-residents, $80/course. If a student is enrolled solely for completion of the thesis or dissertation, the quarterly registration fee is $8 for residents, $33 for U.S. nonresidents, and $28 for foreign nationals.

166 **UNIVERSITY OF TORONTO.** Graduate Department of Community Health. McMurrich Building, Toronto, Ontario, Canada M5S 1A8. (416) 978-2058. Contact: Professor David Hewitt, Graduate Secretary.

Offers a Master of Health Science (M.H.Sc.) with a specialty in Occupational and Environmental Health. Course sequences have been planned to include a core course in each term, to allow as much elective time as possible, and to permit the application of theory to practice in a field setting. Depending on the area of specialization, students require 15-22 months to complete the M.H.Sc. program, including time spent in appropriate field settings. A thesis is not required, but students may be required to undertake major papers and independent projects. The Master of Science and Doctor of Philosophy degrees are offered for those interested in research and academic careers in the field of community health with programs in environmental and occupational health. Courses may be selected from those offered by the division of Community Health or from other graduate departments. A Diploma in Industrial Health is offered to provide postgraduate professional training in the field of industrial and occupational health and safety. The program is designed for students who do not wish to undertake a program of the length, scope, or degree of specialization expected in the M.H.Sc. program. Full-time students can complete the program in a single academic session of nine months. Courses for the various programs include Occupational and Environmental Hygiene, Perspectives in Occupational Health and Safety, Environmental Management, Dynamics of Environmental Pollutants, Health Effects of Physical Agents, Occupational Hygiene Control Methodology, Advanced Clinical Studies in Occupational Medicine, Accident Prevention, Investigative Techniques for Occupational Nurses, Environmental Health, Topics in Human Science, Special Topics in Occupational and Environmental Health, Radiological Health, Applied Toxicology, and Environmental Pathways. A limited number of fellowships, scholarships, and bursaries for full-time graduate work are available through the University and other sources.

Fees: Canadian citizens and landed immigrants, $840; non-exempt visa students, $2,040. Costs are expressed in Canadian dollars.

167 **UNIVERSITY OF UTAH.** Rocky Mountain Center for Occupational and Environmental Health. 50 North Medical Drive, Salt Lake City UT 84132. (801) 581-8719. ERC Director: William N. Rom, M.D., M.P.H. Contact: William N. Rom, M.D., M.P.H., Director, Rocky Mountain Center for Occupational and Environmental Health, and Chairman, Division of Occupational and Environmental Health, Department of Family and Community Medicine.

Offers M.S. in Industrial Hygiene and Safety to applicants with demonstrated superior academic skills and degrees in physical sciences, biology, or engineering. The M.S. may be completed in a two-year period, in one year and two summers, or in a five-year work/study program. The degree requires completion of 60 credits and a

thesis. Courses include Biostatistics, Epidemiology, Environmental Health Problems, Community Analysis, Social Context of Health Care Delivery Systems, Health Care Organization, a Seminar in Community Medicine and Occupational Health, Industrial Hygiene, Advanced Topics in Industrial Hygiene, Industrial Hygiene Chemistry, Noise Control, Ventilation Engineering, Preceptorship in Industrial Hygiene, Industrial and Mining Safety, and Radiation Biology.

Tuition: full-time (15 or more credits/quarter) residents, $214/quarter; part-time, $72.50/credit. Full-time non-residents, $554/quarter; part-time, $83/credit.

168 **UNIVERSITY OF WISCONSIN-PARKSIDE**. Science Division, Industrial and Environmental Hygiene Discipline. Kenosha WI 53141. (414) 553-2430. Contact: Behzad Samimi, Ph.D., Associate Professor.

Offers B.S. in Industrial and Environmental Hygiene for completion of 120 credits. Concentration requirements prepare the student for a specific area, such as Industrial Hygiene, Environmental Hygiene, or Radiological Health. Courses include Environmental and Occupational Health, Issues in Environmental and Occupational Health, Industrial Hygiene, Disease Processes, Industrial Biology, Epidemiology, Environmental Toxicology, Health Laws and Regulations, Organization and Administration of Health Programs, and a Senior Seminar. An Externship in Industrial and Environmental Hygiene is also included to provide the student with an opportunity to experience actual problems associated with the practice and management of industrial hygiene or environmental health.

Tuition: residents, $348.50/semester for 12 or more credits; $38.25 for first credit less than 12, and $28.25 for each subsequent credit. Non-residents, $1,214.50/semester for 12 or more credits; $110.50 for first credit less than 12, and $100.50 for each subsequent credit.

169 **UTAH STATE UNIVERSITY**. Department of Biology, College of Science. UMC 53, Logan UT 84322. (801) 752-4100. ERC Director: William N. Ron., M.D., M.P.H. Contact: Dr. Robert Parker, Occupational Safety and Health Program Coordinator, Biology Department.

As part of the University of Utah's Rocky Moutain Center for Occupational and Environmental Health Educational Resource Center, Utah State offers a B.S. in Public Health with an Industrial Hygiene emphasis for completion of 186 quarter credits. The program is open to those who have taken the appropriate college preparatory courses, particularly mathematics and science. Courses include Industrial Safety, Safety and Health Management, Industrial Hygiene, Industrial Hygiene Field Methods, Environmental Health, and Radiation Safety. Program participants take an internship with other Public Health students and undergo a field experience in industry.

Charges: residents, $201/quarter (10-20 credits); non-residents, $524/quarter; foreign students, $534/quarter.

170 **WAYNE STATE UNIVERSITY**. Department of Occupational and Environmental Health, School of Medicine. 625 Mullett, Detroit MI 48226. (313) 577-1225/1226. Contact: H. L. Berke, Ph.D., Graduate Officer of the Department of Occupational and Environmental Health.

Offers an M.S. degree in Occupational and Environmental Health with a specialty in Industrial Hygiene or Industrial Toxicology. Candidates must have a baccalaureate degree from an accredited college or university and an honor point average of 3.0 or better and must score well on the GRE. Courses are offered in the areas of Industrial Toxicology, Industrial Hygiene, Control Methods, Statistics, Noise, Air Pollution, and the Chemistry of Industrial Processes.

Tuition: residents, $55/quarter hour, or $420/quarter; non-residents, $108/quarter hour, or $978/quarter.

171 **WEST VIRGINIA UNIVERSITY**. Environmental/Occupational Health Studies. Room 263, Coliseum, Morgantown WV 26506. (304) 293-3295. Contact: Dr. Robert L. Kurucz, Director.

Offers M.S. in Occupational Health Studies to candidates who have completed a baccalaureate degree such as Biology, Chemistry, Physics, Mathematics, Engineering, or Social Science. The M.S. program requires completion of 36 semester hours with a thesis option available. Limited financial assistance is available. Core Course Curricula include Public Health Legislation, Epidemiology, Biostatistics, Radiological Health, Environmental Health Sampling, Environmental Health Analysis, Sanitary Chemistry and Biology, Engineering Acoustics, Heating Ventilation and Air Conditioning, Toxicology, Health Hazard Loss Control Management, Air Pollutants, and Solid Waste Disposal.

Charges: residents, $16/semester hour; non-residents, $73/semester hour. Special fees of $20-$55 are also assessed.

172 **WESTERN KENTUCKY UNIVERSITY**. Department of Engineering Technology. Bowling Green KY 42101. (502) 745-2461. Contact: Dr. John P. Russell, Associate Professor.

Offers B.S. in Environmental Science with an option in Industrial Hygiene for completing 131-132 credit hours. The program is open to graduates of accredited Kentucky high schools or of other accredited high schools with 2.0/4.0 GPA. Core courses include 15 hours of chemistry, 7 hours of biology, 11 hours of mathe-

matics, and 8 hours of biophysics. Technical specialty courses include Environmental Studies, Industrial Hygiene, Physical Hazards, Air Pollution Control and Lab, Manufacturing Processes, Biostatistics, Epidemiology, and Radiological Health and Lab. The curriculum also includes 21 hours of technical and approved electives.

Tuition: residents, $240/semester; non-residents, $600/semester.

PROGRAMS IN OCCUPATIONAL HEALTH NURSING

173 **CALIFORNIA STATE UNIVERSITY, FULLERTON.** Fullerton CA 92634. ERC Director: B. Dwight Culver, M.D. Contact: Joan Brown, Administrative Assistant, Department of Community and Environmental Medicine, College of Medicine, University of California, Irvine CA 91717. (714) 833-5853/6269.

As part of the ERC program administered by the University of California at Irvine, California State University at Fullerton plans to offer a B.S. degree in Nursing, with a subdiscipline in Occupational Health Nursing. Admissions requirements include an A.A. degree in Nursing or its equivalent, one year of work experience, a California Registered Nurse License, and transferable courses in college-level Chemistry, Microbiology, Anatomy, Physiology, and Social Sciences. A minimum of 56 and a maximum of 70 lower-division semester hours may be transferred into the University.

174 **CITY COLLEGE SCHOOL OF NURSING. COLLEGE OF THE CITY OF NEW YORK.** 138th Street and Convent Avenue, New York NY 10031. ERC Director: Irving J. Selikoff, M.D. (212) 650-6174. Contact: E. C. Gioella, Ph.D., R.N., or G. Kilburn, M.S., R.N., (212) 690-8291.

As part of the Mount Sinai School of Medicine Educational Resource Center, City College offers a baccalaureate degree in Nursing with emphasis in Occupational Health Nursing for completion of 110 credits, of which 46 credits must be in Nursing and 64 credits must be earned in the sciences and humanities. Entry into the Nursing major (with emphasis in Occupational Health Nursing) requires 64 college credits in the sciences and humanities with a grade point average of 2.5 or better. Courses include Introduction to Occupational Health Nursing, Occupational Health Nursing Interventions, and Implementation of Occupational Health Nursing.

Tuition: $35/credit hour.

175 **HARVARD UNIVERSITY**. Occupational Health Program, Department of Physiology, School of Public Health. 665 Huntington Avenue, Boston MA 02115. (617) 732-1260. ERC Director: John M. Peters, M.D. Contact: Lawrence J. Fine, M.D.

The School of Public Health currently is developing a program in Occupational Health Nursing. Degrees to be earned will be Master of Public Health and Master of Science.

176 **JOHNS HOPKINS UNIVERSITY**. School of Hygiene and Public Health. 615 North Wolfe Street, Baltimore MD 21205. (301) 955-3295. ERC Director: Gareth M. Green, M.D. Contact: Diane G. Fogleman, Ph.D., Director, Occupational Health Nursing Program.

Offers M.P.H., Dr.P.H., and Sc.D. in Occupational Health Nursing. Admission to the M.P.H. program requires a baccalaureate degree and college level courses in algebra, biology, and chemistry; registered nurses with satisfactory professional and academic credentials will be considered for admission to degree programs. Doctoral programs require a previous Master's degree and a background in the health sciences for admission. The M.P.H. program is intended to provide one calendar year of training for mid-career nurses who wish to prepare for positions in teaching, industry or government. The Dr.P.H. and Sc.D. programs feature concentrations in environmental sciences, administration, or epidemiology and focus on selected aspects of preventive health care in working populations. Postdoctoral study is offered to a limited number of nurses whose doctoral preparation is in a field related to Occupational Health and who wish to enter this field. A total of 64 credits earned over at least four academic quarters are required for the M.P.H. program; requirements for the other degrees vary. Courses offered in Occupational Health Nursing include Environmental Toxicology, Biostatistics, Health Services Administration, Epidemiology, The Environment, and Occupational Health. Related courses include Physiology, Maternal and Child Health, The Problem of Work, Occupational Medicine, Clinical Toxicology, Environmental Law, Behavior Sciences, Adult Health Management, Industrial Ventilation, Occupational Safety Management, Epidemiology of Occupational Disease and Methods, and Evaluation of Health Education. A seminar in Occupational Health Nursing and field studies and projects are arranged for individual students.

Tuition: full-time, $1,125/academic quarter; part-time, $94/credit. There is also a one-time matriculation fee of $160.

177 **TEXAS WOMAN'S UNIVERSITY**. Occupational Health Nursing Program, Houston Center, College of Nursing. 1130 M. D. Anderson Blvd., Houston

TX 77030 (713) 792-7997/7945. ERC Director: Marcus M. Key, M.D. Contact: Mary E. Ranjes, R.N., M.P.H., Director, Occupational Health Nursing Program.

As part of the program of the University of Texas ERC, Texas Woman's University offers a Master of Science with a major in Occupational Health Nursing. The twelve-month program requires a minimum of thirty-six hours (including the preparation of a thesis) from Texas Woman's University and The University of Texas School of Public Health. Applicants must have: a baccalaureate degree with an upper division major in nursing from a program accredited by the National League for Nursing; a current license for practice of professional nursing in the United States; a course in statistics; a course in physical assessment; recommendation for admission by the Admissions Committee and the Associate Dean for Graduate Studies in the College of Nursing; and eligibility for admission to the Graduate School. Students may enter the program only in the fall semester. Courses include: Community Health Nursing (with clinical practice in an occupational health setting); Occupational Health Nursing Role (didactic and practicum); Nursing Research; Practice-Oriented Nursing Theory; Epidemiology; and Occupational Health and Fundamentals of Industrial Hygiene.

Tuition: residents and non-residents, $4/semester hour, plus approximately $110/semester in fees.

178 **UNIVERSITY OF ARIZONA.** Arizona Center for Occupational Safety and Health (ACOSH), Department of Community Health Nursing, College of Nursing. Tucson AZ 85724. (602) 626-6162. ERC Director: Herbert K. Abrams, M.D., M.P.H. Contact: Lois E. Prosser, R.N., M.S.N., Director, Occupational Health Nursing Program.

Offers M.S. in Nursing with specialization in Occupational Health Nursing to prepare clinical nursing specialists in OSH. Students also may work toward a Ph.D. in Nursing with a sub-specialization in Occupational Health Nursing. Admission requirements include eligibility for admission to the Graduate School, graduation with a baccalaurate degree in nursing from a program accredited by the National League for Nursing with a G.P.A. of 3.0/4.0, a current license to practice nursing, and acceptable scores on the GRE. Applicants with other degrees may have to complete deficiencies in nursing and/or graduate prerequisites. The curriculum includes Nursing Theory and Clinical Practices, Evaluation Process in Nursing, Clinical Phenomena, Methods of Nursing Research, Occupational Health Nursing Thesis, Occupational Safety and Health, Industrial Toxicology, Safety Management, Epidemiology, and other courses related to industrial hygiene, safety, or occupational diseases. The program requires 36 units, including a thesis, and may be completed in 12 months.

Tuition: full-time Arizona residents, $225/semester or $32/unit; non-residents, $1,050/semester or $45/credit unit. Stipends up to $3,900 are available.

179 **UNIVERSITY OF CALIFORNIA, SAN FRANCISCO.** Department of Mental Health and Community Nursing, N505Y. Occupational Health Nursing Program, School of Nursing, San Francisco CA 94143. (415) 666-1381/1482. Contact: Barbara Resnik, R.N., M.P.H., Nursing Program Director.

The University plans to offer a two-year Masters of Science degree in Nursing as part of a core pathway program, which prepares clinical specialists with nurse practioner skills in adult primary care nursing. Admission to the program requires graduation from a National League of Nursing accredited baccalaureate program in nursing, registration as a professional nurse in California, completion of an introductory course in statistics, submission of GRE scores, and one year of recent work experience as an R.N. related to the prospective field of study. Application deadline is March 1st.

180 **UNIVERSITY OF CINCINNATI.** Graduate Program, College of Nursing and Health. William Cooper Procter Hall, 3110 Vine Street (38), Cincinnati OH 45219. (513) 872-5505. ERC Director: Dr. Raymond R. Suskind, M.D. Contact: Director of Graduate Program, or Carol F. Silberstein, R.N., Program Director, Occupational Health Nursing.

Offers a two-year M.S.N. program in Occupational Health Nursing to prepare nurses to recognize, control, and evaluate hazards within the work environment. Candidates must be registered professional nurses with a baccalaureate degree from an accredited nursing school. Applicants must also submit scores from the Miller Analogies Test. The degree requires completion of 90 quarter credits; emphasis is on development of clinical nursing expertise, mental health, recognition of work hazards, physical assessment, and occupational epidemiology. The first year serves as an academic base for the second year's increased practical experiences in the specialty of Occupational Health Nursing and for completion of a thesis. Courses include Nursing Theory and Research, Statistics, Biochemistry and Physiology, Physical Diagnosis, Clinical Nursing, Epidemiology, Emergency Room Nursing, Environmental Health Technology, Toxicology, and Occupational Health Nursing.

Tuition: residents, $41/credit hour; non-residents, $81/credit hour.

181 **UNIVERSITY OF ILLINOIS AT THE MEDICAL CENTER.** School of Public Health. Post Office Box 6998, Chicago IL 60680. (312) 996-2591. ERC Director: Bertram W. Carnow, M.D. Contact: Dr. Jean Wood, Acting Director, Occupational Health Nursing.

The College of Nursing offers an 18-month M.S. program focusing on Occupational Health Nursing for completion of 65-70 quarter hours, including 13 quarter hours of research. Applicants need a baccalaureate degree with an upper division major in nursing, a transcript, an undergraduate GPA of 4.0/5.0, acceptable GRE scores,

recommendations from three professionals knowledgeable about applicant's academic and practice ability, and a pre-admission interview. This program is intended for professional nurses interested in pursuing teaching, administrative, or practice careers in local and state health departments, occupational settings, and colleges of nursing. The student is expected to develop skills in the clinical management of adults' health conditions, in developing and evaluating occupational health nursing programs, and in carrying out studies relevant to the field of occupational health nursing. Course work relating to physical assessment is carried out by the College of Nursing. Course work offered in the School of Public Health includes Biometry, Epidemiology, Occupational Health, Industrial Hygiene, and Environmental Toxicology. Trainees must complete two occupational health nursing courses and will be expected to attend occupational medicine consultation rounds and to spend time in the occupational medicine clinic of Cook County Hospital. Field work in private industry, local, state and federal government, insurance companies, and union health programs is an integral part of the programs.

The School of Public Health also offers M.S. and M.P.H. programs focusing on Occupational Health. The M.S. requires 50 quarter hours of course work and 22 quarter hours for research and thesis and is completed in 18 months. The M.P.H. degree requires 50 quarter hours of course work and one year to complete. Admission requires a baccalaureate degree, transcripts, and GRE or other national test scores. Courses include Epidemiology, Biometrics, Health Resources Management, Environmental Health Science, Health Care Systems, Occupational Safety, Toxicology, and Occupational Psychology. All trainees must complete two occupational health nursing courses, attend occupational medicine consultation rounds, and spend time in the occupational medicine clinic of Cook County Hospital. All trainees have opportunities to participate in health hazard evaluations of workers potentially exposed to toxic substances, to develop evaluation criteria, and to screen employees in the workplace. Field work is an integral part of the program.

Tuition: residents, $332/quarter; non-residents, $742/quarter.

182. **UNIVERSITY OF MINNESOTA.** Public Health Nursing, School of Public Health. 1325 Mayo Memorial Building, 420 Delaware Street S.E., Minneapolis MN 55455. (612) 373-8055. ERC Director: Conrad P. Straub, Ph.D. Contact: Elaine Richard, Acting Program Director, Occupational Health Nursing.

Offers a two-year Master's program in Occupational Health Nursing. The program provides an interdisciplinary learning environment in which students prepare themselves for leadership positions in occupational health nursing. The program focuses on theory and application of knowledge and skills in assessment and control of environmental health and safety hazards, occupational health problems, management/labor relations and federal/state government standards and regulations. Independent decision-making, incorporating the basic tenets of public health and research is integrated into the curriculum. Students acquire clinical experience in

occupational health settings and have practicum options in consultation, supervision, or education. The program is accredited by the National League of Nursing and leads to M.P.H. or M.S. degrees.

Tuition: M.S. residents, $31.00/credit; non-residents, $86.50/credit. M.P.H. residents, $357.00/quarter; non-residents, $982.00/quarter.

183 **UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL.** Department of Public Health Nursing, School of Public Health, 201 H. Chapel Hill NC 27514. (919) 966-1069. ERC Director: David A. Fraser, Sc.D. Contact: Cynthia C. Houston, R.N., M.P.H., Program Director, Occupational Health Nursing.

The M.P.H. degree program is eleven and one-half months in length and prepares experienced occupational health nurses for positions in administration, consultation, or supervision. A second program, leading to an M.S. degree, is two academic years and one summer in length and prepares experienced occupational health nurses for teaching positions. The programs consist of 40-51 units of study. Core courses for both programs are Public Health Statistics, Principles of Epidemiology, Applied Physiology and Toxicology, Occupational Health Nursing, Industrial Hygiene Practice, Research Methods Applied to Community Health Nursing, Elements of Environmental Health, and Field Practice in Community Health Nursing. Candidates must be graduates of a B.S. program accredited by the National League for Nursing or equivalent, must present GRE scores, must have a strong overall record with a grade average of B or better in nursing major, and must have a minimum of two years experience in occupational health nursing practice.

Tuition and Fees: residents, $385.50/semester; non-residents, $1,117.50/semester. NOTE: In-state tuition rates apply to non-residents attending the School of Public Health under the Southern Regional Education contract arrangement for participating states.

184 **UNIVERSITY OF NORTH CAROLINA AT GREENSBORO.** School of Nursing. McIver Street, Greensboro NC 27412. (919) 379-5010. Contact: Timothy McBride, R.N., M.P.H., F.N.P.

Offers a Certificate for completion of a ten-month Occupational Health Nurse Practitioner Program to graduate professional nurses currently registered to practice in the U.S. Candidates must be presently employed in an occupational health setting and have at least one year of nursing experience in occupational health, and satisfactory educational credentials include a baccalaureate or associate degree or a diploma in nursing. Components of the program include Assessment and Data Collection, Role Realignment, Management of Health Problems in Occupational Health, Positive Health Maintenance Management, Counseling and Health Educa-

tion, and Occupational Health. The program includes five months of didactic work on campus at Greensboro and five months of participation in a preceptorship at the candidate's home company or at a site arranged for the program. Candidates must provide documentation showing that a qualified physician has agreed to serve as preceptor for the second five-month period.

A grant from the Department of Health, Education, and Welfare covers academic charges; students must bear the cost of room, board, educational materials, and a small fee for the continuing education units earned under the program.

185 **UNIVERSITY OF UTAH**. Rocky Mountain Center for Occupational and Environmental Health. 50 North Medical Drive, Salt Lake City UT 84132. (801) 581-8278. ERC Director: William N. Rom, M.D., M.P.H. Contact: Mary Jo Bulbrook, Ed.D., Director for Occupational Health Nursing.

Offers Master of Science and Certificate programs in Occupational Health Nursing. The certificate program lasts six to nine months and provides interdisciplinary study in occupational health and safety. The Master of Science requires 60 credits, including a thesis. The nursing curriculum includes courses in Nursing Administration in Occupational Safety and Health, Advanced Nursing Health Assessment, Health Teaching, Relationships with Management and Unions, Counseling, Hazard Identification, Emergency Care, Health Surveillance, and Advanced Occupational Health Nursing.

Tuition: full-time (15 or more credits/quarter) residents, $214/quarter; part-time, $72.50/credit. Full-time non-residents, $554/quarter; part-time, $83/credit.

186 **UNIVERSITY OF WASHINGTON**. Community Health Care Systems, T502C HSB, SM-24, School of Nursing, Seattle WA 98195. ERC Director: John T. Wilson, Jr., M.D. (206) 543-6950. Contact: Mary Jones, Assistant Professor, or Marian Keefer, Instructor, Community Health Care Systems.

Offers M.N. in Occupational Health Nursing, a curriculum option within the advanced community health nursing program, to prepare nurses for effective, responsible leadership and clinical expertise in occupational health settings. Emphasis is on health assessment skills, therapeutic nursing actions, evaluation of environmental health and safety hazards, and utilization of epidemiological and research designs for determination of health and safety factors in occupational health settings. Applicants must: have a baccalaureate degree in Nursing; present Graduate Record Examination scores, three letters of reference, and a statement of goals related to occupational health nursing; and have completed a descriptive statistics course and an upper level anatomy-physiology course within the last five years. One year of occupational health nursing experience is preferable. Application should be initiated as early as November for the following fall quarter. The pro-

gram lasts five quarters and requires a minimum of 45 credits, including 14 credits for a thesis. Interdisciplinary courses are offered with the School of Public Health and Community Medicine. Core courses include Health Assessments, Therapeutic Nursing Process, Nursing Leadership, Occupational Health Nursing, Occupational Physiology and Toxicology, Application of Epidemiology, Industrial Hygiene and Safety, and Organization and Management of Occupational Health Programs. Field study in occupational settings is provided, and a research project related to occupational health nursing is required.

Tuition and fees: resident graduate students, $257/quarter; non-resident graduate students $912/quarter, for academic year 1978-79. All students will be considered for financial support.

187 **UNIVERSITY OF WISCONSIN-MILWAUKEE.** School of Nursing. P.O. Box 413, Milwaukee WI 53201. (414) 963-5704. Contact: Judy H. Bernhardt, R.N., M.P.H., Associate Professor, Joanna Johnson Professor of Occupational Health Nursing.

Offers a Community Health Nursing Specialist M.S. program with an option in Occupational Health Nursing for completion of a minimum of 36 semester hours. Admission to the program requires a baccalaureate degree in Nursing from a school accredited by the National League for Nursing, a GPA of 2.75 on a 4.0 scale, submission of satisfactory Graduate Record Examination or Miller Analogies Test scores and three letters of recommendation, a personal interview with a faculty member, and completion of an autobiographical sketch. Courses and practical work for the program are offered in the late afternoon or evening in order to accommodate working nurses and other employed students. The program usually requires two years to complete. Components of the M.S. program include Community Health (6 credits), Research (8 credits), and Advanced Clinical Practice (9-12 credits), which includes the Occupational Health Nursing option. 12 additional credits must be earned from elective courses. Some of the courses in the program include Occupational Health and Safety, a Seminar in Community Health Nursing: Occupational Health Nursing, Advanced Practicum in Community Health: Occupational Health Nursing, and Theory Development in Nursing. Instead of having a separate field work phase, the program is structured so that theoretical and practical work take place concurrently. Many participants receive support through a variety of funding sources, and some traineeships are available.

PROGRAMS IN OCCUPATIONAL MEDICINE

188 **CITY UNIVERSITY OF NEW YORK, MOUNT SINAI SCHOOL OF MEDICINE**. Department of Community Medicine, Environmental Sciences Division. One Gustave L. Levy Place, New York NY 10029. (212) 650-6174. ERC Director: Irving J. Selikoff, M.D. Contact: Irving J. Selikoff, M.D., or Ruth Lilis, M.D., for Occupational Medicine Residency; Irving J. Selikoff, M.D., or Arthur Frank, M.D., for Occupational Medicine, Undergraduate; Irving J. Selikoff, M.D., Harry Heimann, M.D., or Minerva Brown, for Occupational Medicine, Postgraduate.

As part of the program of the Mount Sinai School of Medicine Educational Resourse Center, an Occupational Medicine Residency is offered to graduates of approved medical schools who have had at least one year of clinical work with a special emphasis on internal medicine to prepare them for designing, conducting, and evaluating research in occupational disease problems. The program lasts three years and consists of didactic instruction, clinical work in occupational and general medicine, personal instruction, field experience, and seminars. Speciality studies in Occupational Medicine are supplemented by lab work, field studies, clinical instruction, and electives. Study topics include Review of Occupational Diseases, Toxicology, Epidemiology and Biostatistics, Public Health, Administrative and Legal Problems, Workmen's Compensation, Ethics, Physical Sciences, Experimental Pathology Techniques, and Pathology of Selected Occupational Diseases. Most didactic instruction occurs in the first year; the second year includes increased emphasis on clinical work and on field studies. The third year is almost entirely clinical, with emphasis in planning and carrying out research in the participant's field of interest. Courses include Occupational Disease Epidemiology, Biostatistics, Occupational Disease Toxicology, Clinical Studies in Occupational and Environmental Medicine, Community Medicine Seminars, Occupational Pulmonary Disease, and Seminars in Recent Advances in Occupational and Environmental Medicine.

The undergraduate program in Occupational Medicine is offered exclusively to students of Mount Sinai School of Medicine, and it provides selected occupational disease subjects of current interest in lectures and seminar forums. Electives in occupational disease research studies are available, lasting one to six months. The program is integrated into the four-year medical school curriculum in specifically allotted periods of time and includes not only didactic periods and seminars, but also field observations of occupational health problems as they occur in industry, labor unions, and management associations.

The postgraduate program in Occupational Medicine is offered to graduate physicians interested in the subjects offered. The program provides short training courses for physicians to raise their level of knowledge in various areas of occupational medicine. Courses offered for 1978-79 are: Recent Advances in Occupational Medicine, Occupational and Environmental Lung Disease, and Mini-Residency in Occupational and Environmental Medicine.

189 **DUKE UNIVERSITY MEDICAL CENTER.** Department of Community and Family Medicine. P.O. Box 2914, Durham NC 27710. (919) 966-1023. ERC Director: David A. Fraser, Sc.D. Contact: Robert J. Sullivan, Jr., M.D., Program Director of Occupational Medicine, (919) 684-5214.

As part of the program of the University of North Carolina Educational Resource Center, the Duke Medical Center operates a clinic that teaches Occupational Health and Safety to individuals enrolled in the Professional School's nursing, M.D., or Physicians Associate programs, with the long-range goal of providing a degree program at the Clinical Training Site. The clinic currently investigates industrial exposure sites, designs testing procedures, processes subsequent data, and maintains contact with various industrial organizations to provide medical advice.

190 **HARVARD UNIVERSITY.** Occupational Health Program, Department of Physiology, School of Public Health. 665 Huntington Avenue, Boston MA 02115. (617) 732-1260. ERC Director: John M. Peters, M.D. Contact: David H. Wegman, M.D.

Offers a variety of advanced degrees concurrently with or in addition to a residency program in Occupational Medicine. Students with doctoral degrees usually enter a two-year program and follow a curriculum which leads to a Master's of Public Health one year and a Master of Science in a specified field the next year. Occupational Medicine students also may elect to receive a Master's of Industrial Health for completion of 40 credits; this degree is earned in a one-year program which may be taken as part of a two-year approved residency in Occupational Medicine or as an independent one-year program. Two-year programs require 80 credits for completion. Participating physicians may extend studies to earn Sc.D. or Ph.D. in two to three years.

Harvard also offers approved residency training in Occupational Medicine leading to certification of qualified medical school graduates by the American Board of Preventive Medicine. Residency credit is given for one, two, or three years of study leading to one or more advanced public health degrees. The residency also may include supervised work experience which may or may not be part of a doctoral program. Courses offered under these programs include Human Factors in Occupational Health and Safety, Occupational Medical Clinics, Policy Issues in Occupational Health, Critical Review of the Scientific Basis of Occupational Standards, Basic Problems in Occupational Health and Industrial Environments, Human Physiology, Epidemiology, Biostatistics, Toxicology, Industrial Hygiene, Principles of Environmental Health, Epidemiologic Methods, Current Topics in Occupational Health and Safety, Clinical Aspects of Occupational Medicine, Statistical Methods in Research, Advanced Topics in Occupational Health, Computing Principles, Occupational Dermatology, Law and Environment, Administration and Organization of Health Services, Chronic Disease, Radiation Biology, and Technology, Law and the Working Environment, which is offered at Massachusetts Institute of Technology.

Tuition: full-time, $4,600/academic year; half-time, $2,400. Charges include a health service fee for resident students enrolled for six or more credits.

191 **JOHNS HOPKINS UNIVERSITY.** Division of Occupational Medicine, Department of Environmental Health Sciences, School of Hygiene and Public Health. 615 North Wolfe Street, Baltimore MD 21205. (301) 955-3295. ERC Director: Gareth M. Green, M.D. Contact: Edward A. Emmett, M.D., Director, Occupational Medicine.

Offers a three-year Residency in Occupational Medicine in close collaboration with the Johns Hopkins School of Medicine for selected, highly motivated physicians with at least one year of internal medicine or other acceptable clinical training. Some activities are carried out at the U.S. Public Health Service Hospital Cooperative Center for Occupational and Environmental Health (CCOEH), which is jointly directed by the School of Hygiene and Public Health, the School of Medicine, and the Public Health Service. CCOEH has a multi-disciplinary occupational health program involving physicians, epidemiologists, industrial hygienists, clinical toxicologists, and environmental chemists. The first year of the residency leads to the Master of Public Health for completion of 64 credits over a minimum of four academic quarters. The second year involves clinical work within the Johns Hopkins Institutions and other facilities, with rotations in Pulmonary Medicine, Dermatology, Radiology, Emergency Medicine, Rehabilitation, and Occupational Medicine (at CCOEH). The third year consists of field experience which may be undertaken at CCOEH, in an approved industry program, or in a government agency. In selected cases, training suitable for joint certification by the Boards of Internal Medicine and Occupational Medicine may be provided. In addition, pathways leading toward specialized training in epidemiological, clinical, or laboratory research are available, as are a number of other elective programs. In special cases, consideration will be given to training specialists in other fields of medicine in the occupational aspects of their field. Academic courses offered under the program include Environmental Toxicology, Biostatistics, Health Services Administration, Injury Control, Epidemiology, The Environment, Concepts of Occupational Health, Occupational Medicine, Epidemiology of Occupational Diseases, and Issues in Environmental Health Sciences Management.

Tuition: full-time, $1,125/quarter; part-time, $94/credit. A one-time matriculation fee of $160 is assessed. A limited number of traineeships are supported by NIOSH and are competitively awarded to Occupational Medicine residents.

192 **MAYO GRADUATE SCHOOL OF MEDICINE.** Division of Preventive Medicine. Mayo Clinic, Rochester MN 55901. (507) 282-2511. ERC Director: Conrad P. Straub, Ph.D. Contact: Earl T. Carter, M.D., Ph.D., Program Director.

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As part of the University of Minnesota ERC, the Mayo Graduate School of Medicine offers a program in Internal Medicine-Occupational Medicine in collaboration with the School of Public Health of the University of Minnesota. This residency is designed to train physicians in both internal medicine and occupational medicine to qualify them for appointments in major medical centers as clinicians, teachers, and investigators or for departments of public health or corporate medical departments of major industries. Components of the program include three years of internal medicine, one year of University course work leading to the Master of Public Health degree, one year in occupational medicine, and an optional year on a research fellowship. Entry at various levels may be possible if suitable clinical or academic training has been obtained previously. As residents progress through the program they will become eligible for examination by both the American Board of Internal Medicine and by the American Board of Preventive Medicine (Occupational Medicine). Traineeships providing a stipend and covering tuition and other fees are available.

193 **ST. PAUL-RAMSEY HOSPITAL AND MEDICAL CENTER.** 640 Jackson Street, St. Paul MN 55101. (612) 221-8770. ERC Director: Conrad P. Straub, Ph.D. Contact: Robert O. Mulhausen, M.D., Program Director.

As part of the University of Minnesota ERC, St. Paul-Ramsey Hospital and Medical Center offers graduate medical training in Internal Medicine and Occupational Medicine. Residents completing the four-year program will be Board-eligible in Internal Medicine and Occupational Medicine and will receive a Master of Public Health (M.P.H.) degree. The first two years consist of hospital-based experience with rotations in Ward Medicine, Neurology, Dermatology, Emergency Medicine, and Ambulatory Medicine. The third year is the academic component and leads to the M.P.H. from the School of Public Health, University of Minnesota. The curriculum includes Epidemiology, Biostatistics, Environmental Health, Industrial Hygiene, Health Sciences Administration, Toxicology and Radiation. In the fourth year, the resident participates in a variety of clinical rotations providing experience in Occupational Medicine in the hospital/clinical setting as well as various on-site locations. While the fourth year will be tailored to the interests of the resident, the typical program will include hospital-based rotations through the Occupational Medicine Clinic in Pulmonary Disease, Cardiology, Hematology-Oncology, Infectious Disease, Psychiatry, Alcohol and Chemical Dependency, and Audiology. On-site experiences include supervised rotations in industrial settings where practicing industrial physicians and on-site occupational medicine departments are utilized. In addition, a rotation with the Minnesota Department of Health will be offered, emphasizing the legal and regulatory aspects of occupational medicine, health risk assessment, environmental field services, and occupational health.

Stipend, tuition, and other fees will be provided through the National Institute for Occupational Safety and Health Training Grant.

194 **UNIVERSITY OF ARIZONA**. Arizona Center for Occupational Safety and Health (ACOSH). Occupational Medicine Program, Health Sciences Center. Tucson AZ 85724. (602) 626-6835. ERC Director: Herbert K. Abrams, M.D., M.P.H. Contact: Michael R. Gray, M.D., M.P.H., Director, Occupational Medicine Program, or Herbert K. Abrams, M.D., M.P.H., Director ACOSH.

Offers a residency in Occupational Medicine to prepare qualified candidates for certification by the American Board of Preventive Medicine. The program lasts two years following internship and requires an M.D. degree for admission. Didactic work, providing a Master of Science equivalent to the M.P.H., includes Epidemiology, Biometry, Risk Management and Workman's Compensation, Public Health Administration, Environmental Quality, Occupational Diseases, Industrial Toxicology, Occupational Safety and Health, and electives. Clinical work consists of participation in a University-based occupational medicine clinic, an inpatient and outpatient consultation service serving the Southern Arizona region, participation in health hazard evaluation, and sharing medical student and primary care residency training responsibilities of the program. Work in a union occupational health program, an industry-based health clinic, and an independent research project are required of all candidates. Joint residencies conferring eligibility in Family and Community Medicine or Internal Medicine can be arranged, in which case four years are required to complete the program.

Tuition and fees for academic course work are provided. Residency salaries are competitive and commensurate with level of training.

195 **UNIVERSITY OF CALIFORNIA, IRVINE**. Department of Community and Environmental Medicine, College of Medicine. Irvine CA 91717. (714) 833-5853. ERC Director: B. Dwight Culver, M.D. Contact: B. Dwight Culver, M.D., Clinical Professor.

Offers Residency in Occupational Medicine to qualify physicians for certification by the American Board of Preventive Medicine and to advance the abilities of practicing professionals. All participants must be holders of M.D. with at least one year of clinical residency or internship experience. Program duration is two years (six quarters), and requirements include 52 credits from core courses and 20 more from electives, research, and special problems. Courses include Occupational Disease, Work Physiology, Methods for Health Surveillance, Clinical Occupational Medicine, Toxicology, Industrial Hygiene, Environmental Toxicology, Sampling and Analysis in Industrial Hygiene, Principles and Practices of Occupational Health Programs, Biostatistics, Industrial Hygiene Control, Analysis of Health Care Systems, Environmental Epidemiology, General Public Health and Preventive Medicine, and Occupational Epidemiology Seminar.

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There is no tuition charge in the residency program. Fees are supported by grant funds and other sources. Stipends for the residency are equivalent to those of other medical specialties.

196 **UNIVERSITY OF CINCINNATI.** Department of Environmental Health, College of Medicine. Cincinnati OH 45267. ERC Director: Raymond R. Suskind, M.D. Contact: Dr. Stuart M. Brooks, Program Director, Division of Clinical Studies, (513) 872-4043, or Dr. Raymond R. Suskind, Program Director, Occupational Dermatology, (513) 872-5701.

Offers Occupational Medicine two-year Residency and Mini-Residency and M.S. and Ph.D. in Occupational Medicine. Residency programs meet academic requirements for certification of physicians in Occupational Medicine by the American Board of Preventive Medicine. The program is open to graduates of approved medical schools who have completed at least one year of internship or residency in a revelant field in a program approved by the Council on Medical Education of the American Medical Association. The two-year residency accommodates physicians with a variety of interests, including delivery of medical care in an industrial setting or health maintenance organization, research and teaching in an academic unit or national agency, or health affairs administration at a corporate or governmental level. There are five first-year and five second-year positions in the program. The Mini-Residency includes an initial intensive four-week training period and then a five-day, problem-oriented training session twice a year for two years. Courses and topics covered in the two residencies include Environmental Hygiene Technology, Biostatistics, Epidemiology, Occupational Dermatology, Occupational Pulmonary Diseases, Applied Psychiatry for Occupational Physicians, Clinical Toxicology and Pharmacology, Industrial Toxicology Practice, Topics in Occupational Medicine, Industrial Safety, Chemical and Biological Effects of Human Management, and Health Hazard Evaluations. There are a variety of outpatient experiences which provide clinical teaching for residents in the areas of toxicology, occupational dermatology, occupational pulmonary diseases, internal medicine, medical and surgical subspecialities as well as general occupational medicine in an industrial setting. Consultation services for hospitalized patients are also part of the training program.

The University also offers a one- or two-year fellowship leading to a Master of Science in Occupational Dermatology. Candidates generally are physicians with at least two previous years of approved training in dermatology or occupational medicine. Required courses include Environmental Hygiene Technology, Clinical Toxicology, Basic Science in Relation to the Skin, Epidemiology, Toxicology, Biostatistics, Practical Occupational Dermatology, Workmen's Compensation, Perspectives and Critical Problems in Occupational and Environmental Medicine, Fundamental Concepts for Occupational Medicine, Histopathology of the Skin, Introduction of Medical Mycology, and Principles and Practices of Occupational Dermatology. Fellowships are available and range from $10,000 to $14,000 per annum.

Stipend for the Residency is $13,000-$14,000/year. Tuition for the Mini-Residency four-week intensive program is $1,000, and the five-day follow-up sessions cost $50/day.

197 **UNIVERSITY OF ILLINOIS AT THE MEDICAL CENTER.** Division of Occupational Medicine, Department of Medicine, School of Public Health. P.O. Box 6998, Chicago, IL 60680. (312) 996-2591. Contact: Bertram W. Carnow, M.D., ERC Director and Chairman, Division of Occupational Medicine; or Shirley A. Conibear, M.D., M.P.H., Director of Programs in Medicine, Cook County Hospital, 1304 Karl Meyer Hall, 720 S. Wolcott, Chicago IL 60612, (312) 633-5310.

Offers a 3-year Residency in Occupational Medicine to graduates of approved medical schools. Physicians who have completed other postgraduate programs may apply for advance standing in the Residency Program. Externships for medical students also are available provided students have completed a clerkship in Internal Medicine and spend at least four weeks in the program. The three-year program includes completion of an M.P.H., requiring a minimum of 50 credits. Specific Occupational Medicine activities include participation in rounds, outpatient clinics, and regularly scheduled conferences. During the second year the resident spends eight months as a full-time student in the M.P.H. program at the University of Illinois School of Public Health and participates in rounds, conferences, and clinics in Occupational Medicine. While enrolled in the School of Public Health, courses in Epidemiology, Biometry, Industrial Hygiene, Occupational Medicine, Toxicology, Safety, Occupational Psychology, and Radiological Health are taken. Four sub-specialty rotations are held at Cook County Hospital and consist of pulmonary medicine, neurology, radiology, and dermatology. In the third year, three months are spent as an occupational medicine consultant at Cook County Hospital, three months are spent in an industrial setting, and three months are spent carrying out health hazard evaluations or other epidemiologic studies. Residents also may select a variety of experiences in industry, clinical settings, with labor unions, or in government for three months. A combined four-year Residency program which allows a physician to become board eligible in both Internal Medicine and Occupational Medicine also is offered.

All tuition in the School of Public Health is paid for by the Division of Occupational Medicine for all residents enrolled in the Residency Program. Housestaff salaries start at $13,000 for the first year and increase $600 each year thereafter.

198 **UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL.** Division of Pulmonary Diseases, School of Medicine. 724 Clinical Sciences Bldg., 229 H, Chapel Hill NC 27514. (919) 966-2534. ERC Director: David A. Fraser, Sc.D. Contact: M. C. Battigelli, M.D., M.P.H., Professor of Medicine.

Occupational Medicine program offers physicians a Master of Scienc . in Industrial Hygiene to provide the necessary knowledge and ability to organize and administer comprehensive occupational medicine science programs in an industrial setting or in private practice. The program provides satisfactory experience to qualify for Board Certification in Occupational Medicine. Candidates must have M.D. degrees and at least 2 years of practice in related fields. The program integrates traditional medical skills with quantitative approaches to occupational disorders, encompassing biostatistics and epidemiological expertise. A total of 36 units are required for the degree, including 20 from required courses and 16 in electives. Outpatient Clinic Activity and a Research Project are also completed within this year of study.

Tuition and fees: residents, $385.50/semester; non-residents, $1,117.50/semester.

199 **UNIVERSITY OF TEXAS SCHOOL OF PUBLIC HEALTH.** Houston TX 77025. (713) 792-4312. ERC Director Marcus M. Key, M.D., Professor of Occupational Medicine. Contact: Marcus M. Key, M.D.; Robert A. Wise, M.D.; D. Jack Kilian, M.D.; or James W. Hammond, M.S., P.E.; C.S.P., C.I.H.

The School of Public Health offers physicians the opportunity to prepare for Board Certification in Preventive Medicine. Residencies are available for both academic and in-plant years. The academic year required by the Board is fulfilled by the M.P.H. program in Safety and Public Health and includes courses in Epidemiology, Biometry, Occupational Health, Industrial Hygiene, Clinical Occupational Medicine, Toxicology, and a variety of other courses related to occupational medicine. Residents are offered a variety of in-plant opportunities and experiences, depending on their area of specialty or interest. A whole year may be spent at a single industrial site or three to four months may be spent in a variety of medical industrial facilities. In addition to a required Master's research thesis, there are opportunities for applied research. NIOSH post-doctoral fellowships and grants and some private grant money are available to applicants.

Charges: full or part-time residents, $33/quarter; non-residents, $80/course.

200 **UNIVERSITY OF UTAH.** Rocky Mountain Center for Occupational and Environmental Health. 50 North Medical Drive, Salt Lake City UT 84132. (801) 581-8719. ERC Director: William N. Rom, M.D., M.P.H. Contact: William N. Rom, M.D., M.P.H., Director, Rocky Mountain Center for Occupational and Environmental Health, and Chairman, Division of Occupational and Environmental Health, Department of Family and Community Medicine.

Offers qualified physicians an Occupational Medicine Residency lasting two years. The training period is expected to meet the requirements for certification in Occupational Medicine by the American Board of Preventive Medicine. Residents also

earn the Master of Science in Community Medicine with an emphasis in Occupational and Environmental Health for completion of 60 credits. A thesis of nine to fifteen credit hours is required. The second year is spent in research, epidemiologic field surveys, preceptorships with industry or labor, clinical rotations in pulmonary disease, dermatology clinics, occupational medicine clinic, and health hazard evaluations in the Mountain West. A clinical year of training is recommended; however, it is provided in the Family Practice program. Combined programs in Family Practice over a four-year period leading to double board eligibility and for internists desiring to subspecialize in pulmonary disease over a three-year period leading to double board eligibility in pulmonary and occupational medicine are available. Core courses include Biostatistics, Epidemiology, Environmental Health Problems, Community Analysis, Social Context of Health Care Delivery Systems, Health Care Organization, and a Community Medicine and Occupational Health Seminar. Residents also must complete Statistical Methods in Epidemiology, Program Evaluation, Survey of Management, Air Pollution Control Techniques, Occupational Lung Disease, Advanced Studies in Occupational Medicine, and Biochemical Toxicology.

201 **UNIVERSITY OF WASHINGTON**. Department of Environmental Health, F461 HSB, SC-34, School of Public Health and Community Medicine. Seattle WA 98195. (206) 543-6991. ERC Director: John T. Wilson, Jr., M.D. Contact: John E. Milner, M.D., Associate Professor, Department of Environmental Health (Occupational Medicine).

The Occupational Medicine Residency is a two-year program to train physicians for clinical practice, teaching, or research in occupational medicine. The program promotes use of an epidemiological approach to evaluate, control and prevent environmental problems. Residents may earn an M.P.H. concurrently for completion of 27 course credits and a 9-credit thesis. Admission requirements include graduation from a Class A medical school (United States, Canada or equivalent) and completion of an internship or first-year residency. Stipends begin at $10,000 and are based upon the years of relevant experience at entry. Core courses include: Epidemiology, Biostatistics, Health Services and Medical Care, Environmental Health, Industrial Hygiene, Safety, Occupational Physiology and Toxicology, Occupational Lung Diseases, Occupational Dermatology, and Prevention in Occupational Medicine. A supervised in-plant experience is part of the program.

Tuition: quarterly fees are $229 for residents, $798 for non-residents. All students accepted for the program will be considered for full support for tuition and fees.

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